THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—34TH YEAR. SYDNEY, SATURDAY, AUGUST 23, 1947. No. 8.

Table of Contents.

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

	Page.
ORIGINAL ARTICLES—	
The Bancroft Oration—Clinical Manifestations of Deficiency Diseases in Infants and Children: A Study in Chronic Malnutrition, by F. W. Clements	225
Primary Carcinoma of the Vagina: A Brief Review of the Literature and Reports of Four Cases, by Muriel B. McIlrath, M.B., B.S., F.R.C.S., M.R.C.O.G.	231
Treatment of Varicose Veins by High Ligation, Section and Injection: An Investigation, by O. M. Moulden	234
A Water-Driven Respirator, by P. R. Bull, M.B., B.S.	238
REVIEWS—	
A Year Book of Therapeutics	239
Hormones in Reproduction	240
Whither Medicine?	240
A Book for Expectant Mothers	240
LEADING ARTICLES—	
A Contributory Medical Benefits Fund for New South Wales	241
CURRENT COMMENT—	
Tuberculin Inactivated by Crude Penicillin	242
The Assessment of Acute Blood Loss	242
Surgery in North America	243
Peripheral Facial Nerve Paralysis in High Arterial Blood Pressure	243
ABSTRACTS FROM MEDICAL LITERATURE—	
Ophthalmology	244
Oto-Rhino-Laryngology	245
BRITISH MEDICAL ASSOCIATION NEWS—	
Scientific	246
Notice	247
POST-GRADUATE WORK—	
The Post-Graduate Committee in Medicine in the University of Adelaide	247
The Post-Graduate Committee in Medicine in the University of Sydney	248
CORRESPONDENCE—	
The Future of Medical Practice	249
The Treatment of Epilepsy	250
Shades of Shiga	250
Supply of Anti-Rh Serum	250
NAVAL, MILITARY AND AIR FORCE—	
Appointments	251
AUSTRALIAN MEDICAL BOARD PROCEEDINGS—	
Tasmania	251
Victoria	251
OBITUARY—	
Thomas James William Kenny	251
Clifford Henry	251
NOMINATIONS AND ELECTIONS	251
NOTICE	252
THE FEDERAL MEDICAL WAR RELIEF FUND	252
MEDICAL APPOINTMENTS	252
BOOKS RECEIVED	252
DIARY FOR THE MONTH	252
MEDICAL APPOINTMENTS: IMPORTANT NOTICE	252
EDITORIAL NOTICES	252

The Bancroft Oration.[1]

CLINICAL MANIFESTATIONS OF DEFICIENCY DISEASES IN INFANTS AND CHILDREN: A STUDY IN CHRONIC MALNUTRITION.

By F. W. CLEMENTS,

Institute of Anatomy, Canberra.

FIRST let me record my appreciation of the honour you have conferred upon me by asking me to deliver this oration. At the same time I am conscious of the responsibility it has placed upon me to do justice to the memory of the great Australian whose name has been so fittingly perpetuated by your predecessors. To men of my generation, Bancroft is but a name, but withal a name which thrilled me, when I first heard it as a young medical student. That an Australian should have described a parasite and then be honoured by his fellow scientists for the discovery were in our eyes events of great importance.

In Joseph Bancroft's day nutrition as a science had not arrived, but he was undoubtedly one of the pioneers of at least one branch of the subject. His claim to this position would be based upon his work relating to the improvement of vegetables, the development of new varieties of fruit by hybridization, the studies of diseases of sugar cane and bananas, and his interest in the preservation of fish. He would, I am sure, have approved of an address on nutrition.

It is very fitting that a Bancroft, in the person of Dr. Josephine Mackerras, should return to Brisbane to continue the Bancroft tradition of searching inquiry into medical problems.

Tonight I propose to discuss some aspects of child nutrition. My talk will centre round the group of unfortunate children who by school age have developed the following characteristics. They are not definitely ill, but they are far from enjoying robust and full health. They present a picture of poor physical growth (not just underweight, which of itself has little significance), they lack subcutaneous fat, the muscle tone is poor, the posture is unsatisfactory, they have certain deformities of anatomical structure, and they frequently have a history of repeated low-grade infections which often has meant hospitalization for periods. The diagnosis usually given is "chronic malnutrition".

In the course of a number of surveys conducted during the last twelve months I have seen a disturbingly large number of these children. As one ponders over them a number of questions come to mind. What is the meaning and significance of the clinical signs? What are the steps by which children drift into this state? What does it mean to a child's health, both present and future, that it is suffering from chronic malnutrition?

Some Characteristics of Growth.

One of the commonest clinical features seen in these children is that they are thin; frequently the weight is 20% or more below the average for children of the same age or height. The weight offers a clue to the origin of this condition, but it is of little significance when considered alone.

It is surprising how often a child who is 15% to 20% under weight for either age or height or both has on clinical examination well-developed, firm muscles, good skin and an excellent record of health and physical achievement.

A child's weight must be judged along with the other physical signs; by itself it is not a criterion of malnutrition. A more important feature is the poor development and poor tone of the skeletal muscles. This, together with underweight, constitutes evidence of interference with growth at some time in the child's life. Useful data on some of the vagaries of growth were provided by the results of a series of longitudinal studies on groups of

[1] Delivered at a meeting of the Queensland Branch of the British Medical Association on June 6, 1947.

children. These included the records of pre-school children attending the Lady Gowrie Child Centres and personal observations made in Canberra on a group of some 100 children now nine to ten years of age who have been followed since birth. Amongst the latter were some who, at the age of nine to ten years, showed all the features of chronic malnutrition.

One important finding was that children with chronic malnutrition had passed through relatively long periods in which their growth rate had been seriously retarded. A study of their histories showed that at some point in their life the weight had been stationary or the child had actually lost weight for a time. This interruption with growth must not be confused with the seasonal variations in weight frequently seen in children. These do not as a rule commence before three or four years of age, whereas the initial interference with growth in the children with chronic malnutrition occurred most often before the second birthday.

Interference with the growth of infants is a common experience, but in most cases the effects are not permanent and the children recover the lost weight. Those in whom the interference lasted longer showed a number of distinctive features. The weight curve was stationary or divergent for relatively long periods—for example, for up to three months; the infants did not recover the standard weight curve, but always remained well below it; in some instances they actually continued to diverge slowly away from the standard.

Two sets of factors seem to operate to produce these effects, namely: (*a*) those responsible for the initial interference with growth, and (*b*) those responsible for the failure to recover the standard weight.

It is probable that in some infants they would be identical. The former can be grouped under three main headings: (*a*) acute illnesses, (*b*) deficiency diseases, (*c*) psychological feeding problems.

For a fuller understanding of both these forces it is desirable to review some of the physiology of tissue metabolism.

Some Facts about Tissue Metabolism.

It was formerly thought that once a nutritient substance, for example, fat, protein, calcium *et cetera*, had been deposited in the appropriate tissue it remained there, perhaps indefinitely, perhaps for a long time, to be removed only during severe starvation. This theory of a static tissue did not offer an explanation of the means by which fat and protein are withdrawn in starvation, nor of how the demands of the vital tissues are met in those whose diets are inadequate.

This static theory has now been replaced by the conception of dynamic tissue metabolism which visualizes all tissue as being in a state of constant flux—Himsworth[1] uses the phrase "boiling with activity". A number of studies in recent years provide much of the proof of this theory.

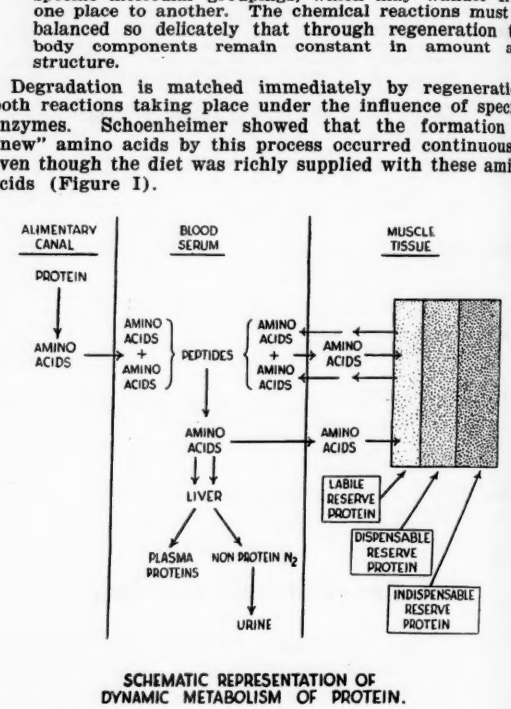
Foremost amongst these is the work of Schoenheimer and his colleagues,[2] who worked with fat and protein. Summarizing his work on fat metabolism with isotopes of hydrogen, Schoenheimer stated:

> The fatty acids of the depot fat are to be regarded as being constantly transported, in the form of fats or phosphatides, to and from the organs, where fatty acids are temporarily liberated by rupture of ester linkages. When fat is adsorbed, the acids of dietary origin merge with those from the depot, thereby forming a mixture indistinguishable as to origin. Part of the liberated acids are converted into others, while new ones are steadily formed by condensation of small molecules derived from other substances.
>
> Some of this pool of acids is degraded, and some of it reenters ester linkages to regenerate fat, which is transported back to the depots. All these complex reactions are so balanced that the total amount and structure of the fat mixture in depot, blood and organs remains constant. If one attempts to summarize the results of the isotope work on fats, one is compelled to conclude that the normal animal's body fats, despite their qualitative and quantitative constancy, are in a state of rapid flux.

The behaviour of muscle tissue is similar. The proteins in the various organs, including that in muscle and the blood, are in a state of constant degradation. The various linkages, including the peptide, open and the fragments liberated are free to join others in the immediate vicinity or are transferred in the plasma to the liver or other organs. Schoenheimer's words clearly explain the phenomena.

> Components of an animal are rapidly degraded into specific molecular groupings, which may wander from one place to another. The chemical reactions must be balanced so delicately that through regeneration the body components remain constant in amount and structure.

Degradation is matched immediately by regeneration, both reactions taking place under the influence of specific enzymes. Schoenheimer showed that the formation of "new" amino acids by this process occurred continuously, even though the diet was richly supplied with these amino acids (Figure I).



SCHEMATIC REPRESENTATION OF DYNAMIC METABOLISM OF PROTEIN.

FIGURE I.

Schematic representation of dynamic metabolism of protein.

Under the influence of forces as yet unexplained, a priority exists amongst the tissues for the components needed for regeneration. Thus amongst protein tissue those in the plasma have a high priority and plasma proteins are maintained at a constant level, even though other tissues go short. When plasma proteins fall it is an indication that the reserves are becoming exhausted. Skeletal muscle has a low priority.

The results of another type of investigation provide further evidence of the existence of dynamic forces in metabolism.

In 1940 Borsook and his co-workers[3] published the results of an experiment in which they injected into a normal subject 16 milligrammes of thiamin containing radioactive sulphur. Of the sulphur, 61% was accounted for as either thiamin or sulphur in the urine and 11% in the fæces six days after injection. The remaining 28% was unaccounted for during these days. In these six days the subject secreted thiamin containing non-radioactive sulphur which must have come from the tissues, and which in turn had been replaced by the thiamin injected.

The behaviour of bone tissue reveals an almost fluid state. A number of investigators[4][5][6][7] have recorded that in many infants bones that were firm at birth become more radio-translucent and even soft during the first few months of life. It is well recognized that the modelling and remodelling of long bones occur as a regular process from birth to maturity. The widest part of a long bone is usually the metaphysis, but as the bone increases in

length an area that was the metaphysis at one age becomes part of the tubular shaft at another. This tubulation is possible only by the absorption of part at least of the material at the site of the metaphysis. The released calcium apparently joins the "pool" of calcium salts in the serum and tissue fluids. It is the release of this reserve of calcium that enables the serum calcium to be maintained within fairly narrow limits in people whose calcium intake is low.

In the healthy adult on a constant food intake the entry of nutrients from the alimentary canal into the blood stream insures a certain "head of pressure" of the nutrients in the blood stream which in turn enables regeneration to proceed at the same rate as degradation in all tissues. When food intake is greater than the demands for maintenance the excess creates a greater "head of pressure" and regeneration of some tissues proceeds at a rate greater than degradation. Especially does this apply to fat deposits. When food intake is below maintenance levels, the amount of nutrients absorbed from the alimentary canal into the blood stream is not sufficient to ensure that the "head of pressure" will keep regeneration equal to degradation and the subject loses weight. If the nutrient is calcium and the intake is low over a long period of time and the demand high, for example, during pregnancy, the ultimate picture is one of osteomalacia.

During the growing period some portion of each nutrient absorbed from the alimentary canal is set aside for growth. The demands for energy have a high priority, and in extreme conditions, such as in starvation, an absolute one over those of growth. In the healthy child on an optimal diet the level of absorption of nutrients is such that the "head of pressure" in the blood and tissue fluids provides surpluses which, under the influence of hormones, are directed to the appropriate sites, and growth proceeds in an orderly optimal manner. If the food consumption is insufficient to meet all needs, the balance available for growth, after the demands of energy have been met, is insufficient to ensure optimal growth.

It frequently happens, as, for example, during an acute illness, that the actual food intake over a period is not sufficient to meet even the needs for energy; then nutrients including fat and protein are withdrawn from the tissue fluids at a rate greater than the regeneration occurs, and the infant or child loses weight. The ability of an infant or child to withstand the impact of this semi-starvation depends to a large extent upon how well stocked are the nutrient depots.

The level of nutrients in the tissue reservoir will depend upon the inherent characteristics of the nutrients and upon the opportunities for storage. It is apparent that fat is easily stored; even the infant and child, given the right conditions, can store appreciable quantities of protein; similarly the body can hold relatively large reserves of calcium. Amongst the vitamins the capacity for vitamin *A* storage is considerable, but limited for the water-soluble vitamins.

Opportunities for storage are controlled by past consumption and the length of time over which the body has been able to store, that is, upon the age of the individual. Storage of nutrients commences before birth, so it is necessary to extend this inquiry with the fœtus.

During the last ten to twelve years the effect of maternal nutrition upon fœtal growth and well-being has been the subject of a number of studies. Direct evidence gathered from the newborn infant is conflicting. On the one hand are the findings of many investigators made in Europe during and immediately after World War I. Bruce Murray[8] summarized these and showed that the mean birth weight of infants born during and immediately after the war was not lower than the mean birth weight of infants born in the previous decade. Garry and Wood[9] after a review of the literature concluded that there was no satisfactory evidence that a baby's weight can be influenced by dietary means. This has been confirmed by recent research in Australia.[10] This may be contrary to the belief of some obstetricians that the birth weight of the infant can be controlled by modification of the food intake of the mother.

In contrast to this are the recorded instances of infants born with deficiency diseases. Jackson and Park[11] reported a case of scurvy in an infant twenty days old, born of a mother with scurvy. In China, Maxwell and his co-workers[12][13] have reported several cases of fœtal rickets in infants, the offspring of women with osteomalacia. These cases suggest that the level of intake by the mother of some nutrients is reflected in the health of the newborn infant.

An explanation of these two apparently conflicting ideas is to be found in the composition of the human fœtus at term.

It has been shown[14][15] that water, fat, and protein are the principal items entering into the birth weight of the infant, whereas the metabolites associated with the development of mineral and vitamin deficiency diseases form probably less than 1% of the total birth weight of the infant.

The level in the maternal blood of the forms in which carbohydrates[16] and fats[17] are transferred across the placenta is not affected by reduced food intake, even severe starvation. Nothing is known of the effects of starvation upon the level of serum amino acids or polypeptides, the forms in which protein is transferred across the placenta. The level of minerals and vitamins in the maternal serum is subjected to considerable variation, especially in pregnancy. This has been confirmed for calcium,[18][19][20] iron,[21] and vitamin *C*.[22][23][24]

This variation in minerals and vitamins on the maternal side of the placenta is reflected in the variation in the level of storage of some of the metabolites in the full-term newborn infant. A range of over 100% has been found in the calcium content of full-term newborn infants,[25] a range of nearly 200% in the vitamin *A* content of the whole liver of seven full-term infants,[26] and a range of more than 400% in the nicotinic acid content of the liver.[27]

Undoubtedly much work yet requires to be done on fœtal nutrition to augment the few facts at present available. From such information as we have, however, it is evident that we are not "all born equal". Maternal health and nutrition determine the level of storage of many metabolites in the body of the newborn infant. Thus some are better equipped from the start for the vicissitudes of post-natal life.

During infancy and childhood wide differences can occur in the actual composition of the body under the influence of different types of feeding. Genevieve Stearns[28] has shown that the nitrogen content of infants receiving full-strength cow's milk increases in a curve, smoothly continuous with the curve of the prenatal content, whereas there is a sharp fall in the curve of the nitrogen content of infants fed breast milk. I am not using this illustration to advocate full-strength cow's milk in place of breast milk, but merely to show how the amounts of a metabolite in the bodies of infants of the same age can vary.

It has similarly been shown[29] that the vitamin *C* content of the plasma of breast-fed infants is always higher than that of artificially fed infants. These examples could be duplicated with other nutrients, altogether demonstrating what is probably a wide range in the normal composition of infants, or in the terms already employed, a wide range in the degree of storage of nutrients in the tissues.

Here could be one explanation for the differences in recovery of different infants and young children from events that cause cessation of growth. Other explanations are bound up with the nature of the events responsible for the initial cessation of growth. I now propose to return to a brief consideration of these.

Acute Illnesses.

Acute illnesses are probably the most common causes of arrested growth in infants and young children. During the active stage of the disease the food intake is low, not enough to meet the requirements for energy and growth, and growth ceases. The rate at which the infant regained its normal weight would depend presumably on the severity of the disease, on the storage of nutrients, on its age, and on the nature of feeding during convalescence. It

has been demonstrated[30] that it is possible to assist the infants to regain the weight lost and to recover their normal weight gain rapidly by what is really forced feeding during the convalescence.

Deficiency Diseases.

As a rule acute deficiency diseases in infants are easily and quickly recognized, whereas the chronic forms are more difficult, and the insidious nature of the onset means delayed diagnosis. Although some advances have been made during recent years in the development of techniques for the recognition of the early stages of deficiency diseases, particularly by biochemical and biomicroscopal methods, we are still unable to recognize some of the ill effects until they have become quite pronounced. Herein lies their importance as the commencing point of chronic malnutrition. Several of the chronic deficiency diseases call for special mention.

Undernutrition.—Undernutrition results from insufficient calorie intake and may occur at any time duuring infancy and in both breast-fed and artificially fed infants. In the latter it usually arises from the use of too weak a milk mixture. In the former because the mother perseveres with breast feeding exclusively when the supply of milk is insufficient to meet the full requirements of the infant. The onset is insidious. If the weight has been recorded regularly, a steady failure to gain at the normal rate is the usual finding; this means that the weight curve diverges from the average.

Protein Deficiency.—Protein deficiency occurs more frequently in artificially fed infants and is usually due to the use of weak milk mixtures. It is, however, sometimes seen in breast-fed infants as a result of a sudden marked reduction in milk intake, because of an acute illness or from a sudden temporary loss of maternal milk. In both types of case the consumption of fat and carbohydrate is insufficient to meet the energy requirements of the infant and fat and protein are withdrawn from the tissues and this results in loss of weight and muscle tone. The condition is acute in its onset, but unless corrected, is likely to pass into a state of chronic undernutrition.

The more usual form of this deficiency disease occurs towards the end of the first year and in the second year of life. This has been described in detail. The main features are lack of appetite, stationary weight curve or even loss of weight and loss of muscle tone. Unless corrected, this condition continues on to chronic malnutrition.

Vitamin C Deficiency.—Vitamin *C* deficiency can occur at any stage during the early years; it is, however, more common in the latter part of the first year and in the first part of the second year. It is not common in breast-fed infants. The dietary pattern in the majority of the cases in my experience is that the infants had been artificially fed for periods varying from three to five months, but without any supplement of ascorbic acid. The usual story was that orange juice had been offered, but the child had rejected it or it had caused him to vomit and the mother had not persevered.

The first indication that all is not well is that the infant ceases to gain normal weight or gains at a rate less than normal. He becomes excitable and peevish and the mother reports that the appetite is poor. Diagnosis is generally made and confirmed by the effect of ascorbic acid therapy. For this reason it is difficult to determine what part subminimal intakes of vitamin *C* have on general nutrition. I was able to trace only one case in which all the facts pointed to inadequate vitamin *C* intake and in which no treatment had been given for some months. The mother failed to carry out the advice given and the infant's weight remained almost stationary for four months, to increase soon after vitamin *C* therapy was instituted. No other signs of vitamin *C* deficiency were noted.

Thiamin Deficiency.—Clements[31] has described a condition of partial thiamin deficiency in breast-fed infants, due to suboptimal quantities of thiamin in the maternal milk, which in turn is due to insufficient thiamin in the diet of the mother. The majority of the infants commenced to develop signs at about fourteen weeks of age. The three characteristic features of the condition are failure to gain in weight at a normal rate, constipation, and in the more advanced form vomiting. If the deficiency is not corrected, the weight curve continues to deteriorate until the infant is transferred to cow's milk mixture. Because cow's milk is approximately three times richer in thiamin than human milk, the change results in a partial if not complete cure of the deficiency state.

Vitamin D Deficiency (Rickets).—In its mild forms rickets is relatively common in Australia.[32] However, the presence of mild subclinical rickets does not apparently interfere with growth; in fact rickets occurs only during periods of active growth.

It will be observed that all these deficiency diseases, with the exception of vitamin *D* deficiency, result in interference with growth. Either the food intake is inadequate or the specific deficiency disturbs metabolism in such a way that appetite is affected with consequent reduced food intake.

Psychological Feeding Problems.

The ill effects of bad management of the feeding regimen can arise at any time, but they are more frequently met at either the weaning period or between two and three years of age.

The development of an unsatisfactory complex about food around the weaning period is generally due to dietary mismanagement at the critical stages during development, with subsequent dulling of the normal reflexes and behaviour patterns.

Even today there is a marked tendency to assume that the breast-fed infant who is growing normally does not require anything but breast milk, with the possible exception of vitamin supplements. Thus it is that many breast-fed infants are introduced, for the first time, to semi-solid foods at the age of eight to nine months. This procedure ignores the normal sequence in the development of the sensations of taste and of the texture of food.

Windle[33] states that taste is developed at birth, but it is doubtful if the differentiation between sour, salt and bitter is well formed at this time. Discrimination appears to be developed fully by the end of the first year, but I have not been able to discover at what age it is critical. Bound up with taste is the capacity to distinguish the textures of different foods.

Some idea of the rate at which these sensations are acquired can be obtained from a study of the development of the functions of the mouth. The newborn infant will swallow only if food reaches the back of the mouth; the sucking reflex draws milk into the throat whence it is swallowed. Aldrich[34] has pointed out that somewhere about the third or fourth month the infant acquires considerable control over the movements of the tongue, associated no doubt with the development of critical tactile sense. When semi-solid food is offered on a spoon after this age, as the lips open the tongue comes forward and takes the food, passing it to the throat whence it is swallowed. This suggests that the infant is now capable of distinguishing differences in character and texture of food. It is logical that now is the time to introduce small amounts of other foods to assist the infant to improve these newly acquired senses and movements. This is the principal purpose of the so-called educational diet. It will be noticed that at about six months of age infants commence a chewing action and semi-solid foods can be introduced with ease from this time onward. The gradual introduction of small amounts of food, other than milk, from three to four months onward will accustom the child to a wide variety of tastes and textures, so that weaning and the establishment of a solid food regimen occur without any abrupt change in the child's experiences.

Difficulties are frequently encountered when attempts are made to wean a nine months old breast-fed infant who has not been previously conditioned to these new experiences. The child refuses anything but the breast; the mother struggles with bottle, cup and spoon, and a complex feeding situation is produced. I have noticed that this happens most frequently in the breast-fed infant who is growing at the normal rate or better; the mother has

plenty of milk and is satisfied with the progress. She believes that cereals and vegetable *purées* are complements to aid growth. Whilst they make a small contribution in this direction, their main value is educational or psychological. In these infants, as in those with deficiency diseases, the end result is restricted food intake during a period of active growth.

I have taken some time to show some of the ways in which the growth of infants and children can be arrested. In all of these the critical factor is reduction in food intake, which may be either the causal factor or the result of reduced appetite following deficiency of a specific nutrient. Thus, not only is the infant deprived of much-needed food, but the stomach becomes accustomed to small quantities of food when it should be progressively enlarging to accommodate increasing amounts.

In the light of these observations on the earlier history of children with chronic malnutrition, I have studied the dietary patterns of infants and young children whose rate of growth has commenced to lag behind the normal. Experience suggests that these are potential victims of chronic malnutrition.

The administration of specific vitamins is effective only if the deficiency is noticed early in its course. Later the vicious circle of reduced food intake and reduced capacity for food must be broken. In my experience this is most effectively achieved by giving a supplement of concentrated food for a short time. I have used a mixture of casein and dried skimmed milk, which provides both protein and carbohydrate.

Reference has already been made to the relationship between undernutrition and protein metabolism. When calorie intake is insufficient to meet energy requirements, tissue protein may be used for energy. Thus some degree of protein deficiency is to be expected in all cases of undernutrition.

It has long been known that during short periods of fasting or feeding on diets low in protein, the protein content of the liver of rats decreases rapidly.[35] Kosterlitz[35] has demonstrated that the protein lost is actually from the liver cytoplasm. Regeneration can be effected by feeding diets rich in protein.

In Africa, Mexico and the West Indies infants dying of acute malnutrition from a diet almost devoid of protein showed profound liver changes. Biopsies from the livers of infants who were very ill but who recovered, showed the disappearance of the pathological changes under the effects of high protein diets. A great deal of work has been carried out in recent years on the relationship of specific items such as the lipotropic factors and the thio-amino acids to the health of the liver.[36][37] Whether slight deficiencies of these elements produce subclinical changes of the liver is not yet known.

Much work yet requires to be done on the effect of low protein intake or of protein deficiency upon children. My own experience has been that high protein supplements stimulate appetite. Is this because they repaired liver damage or made good deficiencies?

The good results obtained with high protein supplements in young infants are in contrast with those usually associated with the attempted treatment of the victims of chronic malnutrition. Recovery can be effected in these latter types of case, but it is a long process, requiring patience on the part of both physician and parents. It so frequently happens that by school age the child has developed a series of complexes about food, including a mass of likes and dislikes. Any new food is greeted with suspicion and even opposition. Our most satisfactory results have been obtained by using the same technique as is employed for infants and very young children, namely, concentrated foods rich in protein and carbohydrate.

Deformities.

I should like to say something about the deformities seen in many of these children. The majority, if not all, have some degree of kyphosis, are markedly round shouldered and most have a Harrison's sulcus in the chest. A number of interesting facts have emerged from the longitudinal study of the group of Canberra children which was commenced some years ago with an X-ray examination to determine the degree of calcification of the long bones of infants during the first two years of life.[32]

It was found that the degree of calcification was incomplete in about 50% of infants and that a number of these developed mild rickets at some time during the first twelve months of life. In a high percentage of these infants the only departure from normal was revealed by the X-ray examination.

The children are now eight to ten years of age and a recent reexamination has shown that there is no correlation between the incidence of Harrison's sulcus and the earlier history of rickets. The children with deformities are equally distributed amongst those with normal and abnormal radiographs. Incidentally there was no correlation between knock knees and the early history either. The surprising observation was a high correlation between poor thoracic posture, that is, the presence of kyphosis, round shoulders *et cetera* and a Harrison's sulcus, almost suggesting that the sulcus, if not initiated by the forward bowing of the thorax on the abdomen, was certainly accentuated by it.

This brings us to a consideration of what might be termed the functional deformities, that is, the kyphosis and round shoulders. It will be an advantage to discuss at the same time muscle tone, for both conditions seem to be related. Poor muscle tone is a constant feature of children with chronic malnutrition. Stuart[38] describing the children after three years of inadequate diet, whom he saw in Marseilles, France, in the spring of 1943, noted listlessness and inactivity, chronic fatigue and lack of muscular development. It has been the experience of Jeans[39] and others[30] that the tone or volume of skeletal muscles can be improved by feeding large supplements of protein. Here it is well to define what the pædiatrician means by muscle tone or muscular development. Some facts of the physiology of muscle will help to do this.

It is generally thought that there is practically no increase in the number of muscle cells after birth[40] so that increase in size of individual muscles (growth) is achieved by an increase in the length and diameter of individual muscle cells. Since 97% to 98% of muscle plasma is composed of protein (16% to 20%) and water makes up the balance, it follows that the growth in muscle is the result of the deposition of protein and water. Reference has already been made to the work of Schoenheimer which describes the to-and-fro movement of protein in and out of muscle plasma.

One feature of the histology of muscle is the system of sheaths. Each fibre is surrounded by a sheath, each group of fibres by a sheath, and finally the whole muscle is encased in a stout connective tissue sheath.

Skeletal muscles are usually attached at both ends to bone and as these grow they usually draw the two ends of the muscles apart. In this way the sheaths elongate with growth. If diet is adequate and the muscle has full opportunities to function, each sheath is filled to the maximum and the muscle feels full and firm. If the diet is inadequate in protein, the sheath is not filled to a maximum and the muscle feels soft and flabby, that is, it lacks development or tone.

With great diffidence I suggest the existence of a relationship between poor muscle tone and poor posture. The posture of our bodies is due to a prolonged state of contraction of balanced muscles. In the healthy individual the head is held upright by the action of the muscles of the back and base of the skull. The release of this action is seen when a person sitting in a chair falls asleep. Sherrington[41] called attention to the fact that posture contractions may be maintained for long periods of time without obvious fatigue. Yet in the child with poor posture the head has more or less permanently slipped forward, the muscles apparently failing to hold it upright.

Some years ago I carried out some experiments on rats in whom a deficiency state was produced. The result was the "humped back". This when studied in detail was found to be due to the lengthening of the muscles passing from transverse process to spine and those from spine to spine.

Can these two types of postural change be explained in the following manner? If a muscle is attached at its origin to a fixed point and has force acting on the insertion, is its length determined by the fullness of the sheath? In other words, is it possible to have two muscles, the lengths of the sheaths being the same, but one muscle containing 50% more muscle plasma than the other? (Figure II.) If this is so, the ends of the fuller sheath would be drawn closer together and would result in the case of children in good posture. We know that inadequate protein nutrition leads to poor muscle tone; does this in turn contribute to poor posture? If so, then poor posture is more than an æsthetic handicap; it is an expression of something far more significant.

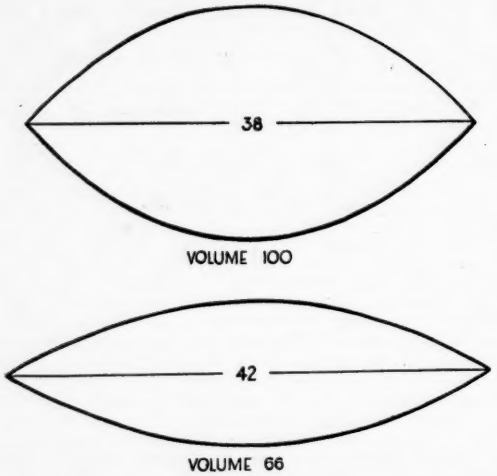


FIGURE II.
Schematic representation of two muscle fibres.

The Significance of Chronic Malnutrition.

One of the most frequently quoted features of malnourished children is that "resistance to infection is decreased". A study of the health records of several thousand pre-school children attending the Lady Gowrie Child Centres showed the frequent coexistence of repeated minor illnesses and poor physical well-being.

Canon, who has played a leading role in demonstrating the importance of adequate protein supplies in the body in the development of resistance to infection, has summarized existing knowledge on immunity as follows:[43]

> 1. Resistance to infection, whether natural or acquired, is dependent upon the processes of protein metabolism, although, of course, not exclusively so. In the development of tissues concerned in anti-bacterial defence, for example, the bone marrow, the phagocytic tissues of the spleen, liver, lymphoid tissues and lymph nodes, a large part of their cells is made up of protein material, as, for instance, the nucleo-proteins of the muscle and the protein of the cytoplasmic matrix. Moreover, for the fabrication of immune substances proteins are necessary: therefore from the standpoint of quality of tissues and of immune substances, amino acids are essential.
>
> 2. Within recent years it has become definitely established that immune substances are serum globulins, that the synthesis of normal serum globulins is dependent on diet, and that the synthesis of immune bodies is also dependent upon dietary intake.
>
> 3. Any condition which affects protein metabolism either by leading to depletion of the protein reserves or by interfering with the adequate intake of high quality protein, may depress resistance (*a*) through reduction in the quantity and quality of the phagocytic tissues, or (*b*) through its adverse effects upon the antibody mechanism.

Immunity to infection applies not only to the acute medical conditions but also to post-operative infection, which is an ever-present surgical menace. Cannon *et alii*[42] have drawn attention to the fact that "although infection may develop under conditions of good nutrition, it is more likely to become menacing or even lethal when basic immunological mechanisms are seriously impaired".

Unfortunately a state of unsatisfactory nutrition before operation is often aggravated by post-operative starvation. In surgical practice, measures are nearly always taken to prevent water and electrolyte starvation, but the carbohydrate given is generally not enough for calorie requirements and the protein totally inadequate to replace the nitrogen loss associated with operative procedures.

Himsworth[44] has drawn attention to the fact that for some time it has been known that during febrile illnesses there is an excessive breakdown of body protein. A similar process is now known to occur after trauma[45] and following burns.[46]

The nitrogen breakdown which begins shortly after the injury reaches its maximum some time from the second to the eighth day, is characterized by excessive loss of nitrogen in the urine, which in some cases may be as much as 8% of the total body nitrogen. One explanation of this is that the body needs in large amounts a special amino acid grouping for repair or for detoxication, that is, for the digestion of the foreign protein of bacteria. To get the required amounts, large quantities of tissue protein must be broken down and the portions not required discarded. There is a moiety of evidence suggesting that the essential nitrogen combination is provided by the amino acid methionine.

Our interest in this process lies in the fact, reported by Himsworth, that the breakdown may not occur when the previous nutrition is poor. Thus what seems to be a part of tissue repair may not occur in the child suffering from malnutrition.

Evidence is accumulating[47][48] that good nutrition is highly effective in preventing recurrences of rheumatic fever. It is logical to assume that inadequate nutrition may be an ætiological factor in the initial attack.

Discussion.

Chronic malnutrition can commence in a number of ways, including the mild stages of specific deficiency diseases, as for example vitamin *B* and vitamin *C* deficiency. However, all these deficiency states are characterized by reduced food intake, which in turn leads to interference with protein metabolism.

There is appreciable evidence to show that protein deficiency *per se* can develop in children. Despite the reputation that Australia has for high protein consumption, a high protein content is not a characteristic feature of the diet of many young children.

A review of the literature suggests that the protein requirements of young children are in the neighbourhood of 40 to 45 grammes per day. This can be achieved by a diet made up as follows:

Milk: 24 ounces per day.
Meat: 1 chop, or 1·5 ounces of chopped steak, or 1·5 ounces of fish per day.
Eggs: 4 per week.
Bread: 1 slice per day.
Cereals: 0·5 cup per day.
Potatoes: 2 tablespoons per day.
Vegetables: 3 tablespoons (mixed).

It is surprising how many children do not have this diet.

Another feature of chronic malnutrition is the insidious nature of the onset, which means that it is frequently missed until well established. The fact that the drift commences with an interference with normal growth some time during infancy and early childhood should direct attention to these minor events. It seems that unless they are corrected the drift continues into the chronic state.

The significance is more than æsthetic; chronic malnutrition may predispose to diseases, may prolong convalescence from acute illness or operation, or may contribute to the development of post-operative infection.

The time for action is not, unfortunately, when the child is nine to twelve years of age, but when the drift commences. Much of the chronic malnutrition can be prevented by taking steps to restore normal growth. Convalescence is a particularly vulnerable time. The diet

should be high in Calories, high in protein, and rich in vitamins of the *B* group and in vitamin *C*. The younger the child, the more urgent the need for this diet.

References.

(1) H. P. Himsworth: "Protein Metabolism in Relation to Disease", *Proceedings of the Royal Society of Medicine*, Volume XL, 1946, page 27.
(2) R. Schoenheimer: "The Dynamic State of the Body Constituents", 1946.
(3) H. Borsook *et alii*: "The Course of Thiamin Metabolism in Man as Indicated by the Use of Radio-Active Sulphur", *The Proceedings of the National Academy of Science*, Volume XXVI, 1940, page 412.
(4) M. Zarfl, E. J. Dalyell and H. M. M. MacKay: "Studies of Rickets in Vienna, 1919-22", Medical Research Council, Special Report Series, Number 77, 1923, page 115.
(5) B. Hamilton and M. Moriarty: "Composition of Growth in Infancy: Premature Infant", *American Journal of Diseases of Children*, Volume XXXVII, 1929, page 1169.
(6) E. Stettner: "*Ossificationsstudien am Handskelet; die physiologische Wellenbewegung der Differenzierung. Die Beziehung Wuchsform: Differenzierung. Die Prognostik der Körpergrösse. Das Metakarpale* 1", *Zeitschrift für Kinderheilkunde*, Volume LI, 1931, page 435.
(7) W. W. Swanson: "Composition of Growth; Full-Term Infant", *American Journal of Diseases of Children*, Volume XLIII, 1932, page 10.
(8) M. Bruce Murray: "Effect of Maternal Social Conditions and Nutrition upon Birth Weight and Birth Length", Medical Research Council of the Privy Council, Special Report Series, Number 81, 1924.
(9) R. C. Garry and H. O. Wood: "Dietary Requirements in Human Pregnancy and Lactation", *Nutrition Abstracts and Reviews*, Volume XV, 1946, page 591.
(10) C. P. Schofield *et alii*: To be published.
(11) D. Jackson and E. A. Park: "Congenital Scurvy", *Journal of Pediatrics*, Volume VII, 1935, page 741.
(12) J. P. Maxwell: "Further Studies in Adult Rickets (Osteomalacia) and Fœtal Rickets", *Proceedings of the Royal Society of Medicine*, Volume XXVIII, 1935, page 265.
(13) J. P. Maxwell *et alii*: "Further Studies in Adult Rickets (Osteomalacia) and Fœtal Rickets", *Proceedings of the Royal Society of Medicine*, Volume XXXII, 1939, page 287.
(14) A. St. G. Huggett: "Nutrition of the Fetus", *Physiological Reviews*, Volume XXI, 1941, page 438.
(15) A. T. Shohl: "Mineral Metabolism", 1936.
(16) C. H. Best and N. B. Taylor: "The Physiological Basis of Medical Practice", 1940.
(17) E. B. Man and Gilden: "Serum Lipids in Malnutrition", *The Journal of Clinical Investigation*, Volume XV, 1936, page 203.
(18) J. Ramsay, V. T. Thierens and H. T. Magee: "The Composition of the Blood in Pregnancy", *British Medical Journal*, June 4, 1938, page 1199.
(19) A. E. Mowry: "The Blood Calcium during Pregnancy", *Canadian Medical Association Journal*, Volume XXVI, 1932, page 160.
(20) G. C. Finola, R. A. Trump and M. Grimson: "Bone Changes in Fetus following Administration of Dicalcium-Phosphate and Viosterol to Pregnant Mother", *American Journal of Obstetrics and Gynecology*, Volume XXXIV, 1937, page 955.
(21) C. V. Moore, C. A. Dean and W. R. Arrowsmith: "The Mechanism of Iron Transportation: Its Significance in Iron Utilization in Anemic States of Varied Etiology", *The Journal of Clinical Investigation*, Volume XVI, 1937, page 627.
(22) C. J. Lund and M. S. Kimble: "Some Determinants of Maternal and Plasma Vitamin C Levels", *American Journal of Obstetrics and Gynecology*, Volume XLVI, 1943, page 635.
(23) H. M. Tell, B. S. Burke and R. Draper: "Vitamin C in Human Pregnancy and Lactation", *American Journal of Diseases of Children*, Volume LVI, 1938, page 1004.
(24) A. Elmby and P. Becker-Christensen: "Ascorbic Acid in Pregnancy, Parturition, the Puerperium and the First Days of the Child's Life", *Klinische Wochenschrift*, Volume XVII, 1938, page 1432.
(25) B. Hamilton: "The Calcium and Phosphorus Metabolism of Prematurely Born Infants", *Acta Pædiatrica*, Volume II, 1922, page 1.
(26) T. H. Henley, M. Dann and W. R. C. Golden: "Reserves, Absorption and Plasma Levels of Vitamin A in Premature Infants", *American Journal of Diseases of Children*, Volume LXVIII, 1944, page 257.
(27) W. Neuweiler: "*Ueber die Versorgung des fœtalen Organismus mit Nikotinsaure*", *Zeitschrift für Vitaminforschung*, Volume XV, 1944, page 76.
(28) Genevieve Stearns: "The Mineral Metabolism of Normal Infants", *Physiological Reviews*, Volume XIX, 1939, page 415.
(29) R. L. Mindlin: "Relation between Plasma Ascorbic Acid Concentration and Diet in the Newborn Infant", *The Journal of Pediatrics*, Volume XIII, 1938, page 309.
(30) F. W. Clements: "Some Aspects of Protein Metabolism in Infants and Children", THE MEDICAL JOURNAL OF AUSTRALIA, September 21, 1946, page 404.
(31) F. W. Clements: "The Symptoms of Partial Vitamin B_1 Deficiency in Breast-Fed Infants", THE MEDICAL JOURNAL OF AUSTRALIA, January 3, 1942, page 12.
(32) F. W. Clements: "Rickets in Infants Aged Under One Year; the Incidence in an Australian Community and a Consideration of the Ætiological Factors", THE MEDICAL JOURNAL OF AUSTRALIA, March 21, 1942, page 336.
(33) W. F. Windle: "Physiology of the Fetus", 1940.
(34) C. A. Aldrich: "Ancient Processes in Scientific Age, Feeding Aspects", *American Journal of Diseases of Children*, Volume LXIV, 1942, page 714.
(35) H. W. Kosterlitz: "Effect of Dietary Protein on Liver Cytoplasm", *Nature*, Volume CLIV, 1944, page 207.
(36) H. P. Himsworth and L. E. Glynn: "Toxipathic and Trophopathic Hepatitis", *The Lancet*, April 8, 1944, page 457.
(37) L. J. Witts: "Dietary Factors in Liver Disease", *British Medical Journal*, January 4 and 11, 1947, pages 1 and 45.
(38) H. C. Stuart: "Nutritional Reconditioning of Children in Occupied Countries", in "Implications of Nutrition and Public Health in the Post-War World", 1944.
(39) P. C. Jeans: "The Feeding of Healthy Infants and Children", "Handbook of Nutrition", Chapter XVII, 1943.
(40) L. V. Heilbrunn: "An Outline of General Physiology", 1943.
(41) C. S. Sherrington: "Postural Activity of Muscle and Nerve", *Brain*, Volume XXXVIII, 1915, page 191.
(42) P. R. Cannon: "Importance of Proteins in Resistance to Infection", in "Implications of Nutrition and Public Health in the Post-War World", 1944.
(43) P. R. Cannon *et alii*: "The Relationship of Protein Deficiency to Surgical Infection", *Annals of Surgery*, Volume CXX, 1944, page 514.
(44) H. P. Himsworth: "Protein Metabolism in Relation to Disease", *Proceedings of the Royal Society of Medicine*, Volume XL, 1946, page 27.
(45) D. P. Cuthbertson: "Post-Shock Metabolic Response", *The Lancet*, April 11, 1942, page 433.
(46) E. H. L. Taylor *et alii*: "Abnormal Nitrogen Metabolism in Burns", *Science*, Volume XCVII, 1943, page 423.
(47) A. F. Coburn and L. V. Moore: "Nutrition as a Conditioning Factor in the Rheumatic State", *American Journal of Diseases of Children*, Volume LXV, 1943, page 744.
(48) D. C. Peete: "Rheumatic Fever. Diet as a Predisposing Factor", *Annals of Internal Medicine*, Volume XXI, 1944, page 44.

PRIMARY CARCINOMA OF THE VAGINA: A BRIEF REVIEW OF THE LITERATURE AND REPORTS OF FOUR CASES.

By MURIEL B. McILRATH, M.B., B.S. (Sydney), F.R.C.S. (England), M.R.C.O.G.,

Honorary Assistant Gynæcologist, Royal Prince Alfred Hospital, Sydney.

PRIMARY CARCINOMA of the vagina is acknowledged to be a rare and usually fatal disease. Moench[1] collected 41 cases at the Mayo Clinic between 1915 and 1931, and among these only nine patients, treated by all methods, survived without evidence of recurrence from two to twelve years. Taussig[12] gives the number of patients treated at the Barnard Free Skin and Cancer Hospital up to October, 1929, as 27. He acknowledges the complete inability of the clinic to do anything effective for patients with primary carcinoma of the vagina. Only two of his patients survived for more than five years. Philipp and Gornick, quoted by Courtial,[3] treated 53 patients between 1913 and 1919, of whom seven survived for five years or more. Courtial himself reports a series of 32 patients treated at the Paris Radium Institute from 1919 to 1935. Of this series 15 were alive in 1938, and of 22 treated between 1919 and 1933, 10 survived for over five years. Lederman and Mayneord[4] give as their experience at the Royal Cancer Hospital, London, seven patients between 1929 and 1940, of whom two survived for three years and one for over five years. Berven and Heyman, quoted by these authors, report 58 patients between 1921 and 1936, and of these patients nine survived for three years and six survived for five years or more. Strachan[13] stated that of 328 patients with gynæcological carcinoma treated since 1922, 13 were suffering from primary carcinoma of the vagina.

The ætiology is unknown.

The use of vaginal pessaries has been suggested as a predisposing factor by Von Wolff,[5] who reported three cases of primary vaginal carcinoma occurring among women who had worn a ring pessary for many years, and who had never changed the ring in spite of long-continued vaginal discharge, seeking advice only when hæmorrhage and pain set in. None of the patients reviewed by Moench had worn a pessary. Johnston[6] reports three patients, none of whom had worn a pessary. Williams,[7] reporting two cases occurring in 25 years at the Boston

City Hospital, states that one patient, a *quadripara*, aged seventy-two years, had a prolapse with the cervix presenting at the introitus, but does not mention whether a pessary was worn. Andrews[8] reported the case of a *multipara*, aged seventy-seven years, who had worn a pessary for four years. It was then left off, and for ten years preceding the onset of symptoms she had worn a tight diaper. In the discussion following the reading of this paper, Cuthbert Lockyer reported a case of procidentia and primary vaginal carcinoma. Stevens[9] reported the case of a patient, aged fifty-three years, who developed a primary vaginal carcinoma. She had worn a Hodge Smith pessary for prolapse, but had discarded it one year before seeking advice for symptoms caused by the vaginal carcinoma. Eardley Holland[10] and Dougal[11] each reported a case of the disease, neither patient having worn a pessary.

The age at which the disease occurs and the parity of the patient vary. Holland's patient, a *quadripara*, was aged forty-six years; Stevens's patient, a *unipara*, was aged fifty-three years; and Dougal's patient, an *octipara*, was aged forty-four years. Johnston's three patients were aged respectively twenty-nine years (parity not mentioned), forty years (*duipara*) and fifty-nine years (*tripara*). Moench states that of her 41 patients, 36 were married, and of these 83% had borne children. The average age incidence was forty-nine years; the youngest patient was aged twenty-eight years, and five were aged thirty-five years or under.

The symptoms are insidious, a watery, blood-stained discharge which is often post-coital being the most noteworthy.

The type of lesion seen also varies. Moench recognizes two early forms. The first is a papillary growth resembling in the early stages a benign papilloma, later becoming a soft, friable, cauliflower tumour mass. The second form begins as a firm nodule which later ulcerates. Johnston's three patients presented themselves with ulcers on the posterior vaginal wall. In Williams's elderly *multipara* the lesion was a cauliflower growth an inch from the cervix and slightly to the left of the posterior vaginal wall. Holland's patient had a circular friable growth on the upper one-third of the posterior wall of the vagina. Stevens's patient had a circular flat nodular growth on the posterior vaginal wall, at first thought to be a downward extension of a cervical growth. Dougal's patient had a friable, plaque-like growth on the upper two thirds of the posterior part of the cervix.

The histological picture is usually that of a squamous-cell carcinoma. Moench mentions that a highly undifferentiated type of cell is characteristic of the condition. Strachan[12] reported two cases of primary adenocarcinoma of the vagina. Both growths were fungating and very friable and responded well to radium. Piper[13] reported a case which he described as a primary diffuse adenocarcinoma of the vagina, of grade I malignancy, though this seems at least open to argument, the condition appearing to resemble that described by Bonney[14] in 1911 as *adenomatosis vaginæ*. The same condition is also described by Plaut and Dreyfuss[16] and by Beckwith Whitehouse,[15] who consider that it may be primary adenocarcinoma.

All authors agree that primary vaginal carcinoma is difficult to treat. Various reasons have been advanced. The condition is so rare that it is doubtful whether any one centre has had sufficient experience to develop a suitable technique. The disease is usually well advanced when the patient is first examined; the undifferentiated type of cell of which the tumour is composed would be responsible for a rapid growth. The vagina is a thin-walled structure, richly supplied with lymph vessels and surrounded by loose connective tissue. There is therefore no effective barrier to local spread, and metastases to lymph nodes occur early; the spread is to the inguinal glands if the growth is in the lower one-third of the vagina, to the external iliac and hypogastric glands if the growth is in the middle one-third, and to the sacral glands if the growth is in the superior two-thirds of the vagina. Finally the bladder and rectum, which are easily damaged by radiation, come into intimate relationship with the vagina.

Lederman and Mayneord recommend radiotherapy. They state that for carcinomata arising in the upper third of the vagina, whether the cervix is secondarily involved or not, the method of choice is that used for carcinoma of the cervix—that is, the insertion of a tube into the uterus and corks or boxes into the lateral fornices, the intra-uterine tube contributing to radiation of the parametria and vaginal vault. They point out that in cases in which the lesion is in the lower or middle third of the vagina, application of radium *per rectum* or *per urethram* is dangerous, and they describe a lead applicator made from a plastic cast of the vagina. They recommend a total dose of 6,000*r* to 7,000*r* for the vagina, but of not more than 5,500*r* for the vestibule. Taussig states that in his series of 27 cases, in some the lesion was too advanced for treatment, and some patients refused treatment, so that irradiation was used in 18 cases only. Radical operation was performed in one recent case, with prompt recurrence. Williams treated a cauliflower growth with a dose of 2,000 milligramme hours; the growth recurred in three years, when a further dose of 2,400 milligramme hours was given. He advises deep X-ray therapy to follow radium treatment. Johnson gave one patient a total of 4,800 milligramme hours in divided doses, and she remained free from recurrence for four years; in another case he excised the lesion, and this patient remained free from recurrence for six years; in one of his cases the growth was too advanced for treatment. Andrews performed vaginal hysterectomy in his case (1922). Holland, Stevens and Dougal all removed the vagina and performed a Wertheim hysterectomy. Holland and Dougal used a double approach, vaginal first and then abdominal. Stevens's patient was given a post-operative course of deep X-ray therapy. The reports were published too soon after treatment for the cure value to be assessed. Moench states that radiotherapy resulted in arrest or cure of the lesion in six of twelve early cases, as opposed to two of twelve in which operative treatment only was given. Further, she stated that the palliative results of radiotherapy compared with the results in cases in which no treatment was given, indicated an added average life of one year and nine months in the early group and of one year and seven months in the advanced group.

In the gynæcological department of the Royal Prince Alfred Hospital, and more recently in the gynæcological department of the King George V Memorial Hospital, there have been only four cases during the years from 1937 to 1947. I am grateful to Dr. F. A. Maguire for permission to report the first two cases, and to Dr. Clement Chapman for permission to report the third case. The fourth case is my own.

Reports of Cases.

CASE I.—Mrs. E.M.L., aged sixty-eight years, who had had ten children and one miscarriage, was first examined on June 18, 1945. She had undergone a hysterectomy in 1935, the reason not being known. She complained of intermittent vaginal hæmorrhage and discharge of four years' duration. Anorexia had been present for two years. On examination, the patient was seen to be a thin woman. An old mid-line infraumbilical scar was present. Vaginal examination revealed that the perineum had been torn through to the anal sphincter and a cystocele was present on coughing. There was a dark red, injected ulcer on the front wall of the vagina, measuring one inch by two inches; the edges were rolled. Some irregular nodules were noted on the posterior vaginal wall. No cervix was palpable with any certainty, and no uterus was palpable.

On June 19, under ether anæsthesia induced by the "open" method, the ulcer was treated with diathermy and a biopsy was taken. Two needles containing twenty milligrammes of radium in corks were inserted and left for fifty hours. The total dose given was 2,000 milligramme hours.

The report on the biopsy specimen was as follows: "Section is that of a squamous carcinoma of well differentiated type. Mitotic figures are frequent."

The patient made a good recovery, and on July 23 when the pelvis was clear on vaginal examination she was allowed to return to the country and report to her own doctor. On January 8, 1946, she again reported to the clinic. An ulcer was present on the anterior vaginal wall, which had

perforated the bladder. She was referred for deep X-ray therapy.

This patient has not answered inquiries, and as the growth was very advanced, death must be presumed to have occurred.

CASE II.—Mrs. M.S.L., aged sixty-five years, who had had six children and two miscarriages, was referred on August 23, 1937. She complained of hæmorrhage *per rectum* on defæcation, present for three weeks, and of severe pain on defæcation of one month's duration. She had a slight discharge *per vaginam* for two weeks, and scalding and frequency of micturition for several months. She had undergone an appendicectomy and had been curetted after her miscarriages.

On examination, the patient appeared to be a pale, elderly woman. There were no abnormal findings in the heart and chest, and only an appendicectomy scar was noted in the abdomen. Vaginal examination revealed an ulcer measuring one and a half inches by one inch on the posterior vaginal wall, one inch from the orifice. The cervix was normal, the uterus was anterior, small, pyriform in shape, smooth and free, and the fornices were clear.

On August 24, under ether anæsthesia induced by the "open" method, a biopsy was taken. The report on the biopsy was as follows: "Sections show carcinoma of the modified squamous type. There is keratin formation, yet in large areas this is not present and it is nowhere as abundant as in typical carcinoma of the vagina. The appearances are more consistent with the diagnosis of primary carcinoma of the cervix, yet carcinoma of the vagina cannot be excluded."

On September 6, under "open ether" anæsthesia, radium was applied; five four-milligramme needles were inserted into the surface of the lesion, and one ten-milligramme tube was applied to it. The total dose was 3,600 milligramme hours. The patient had a late severe reaction, suffering from jaundice and diarrhœa, but recovered and was discharged from hospital on October 5. On November 15 she reported again. The ulcer was healed; much thickening was present in the parametria. The cervix was not palpable, owing to adhesions in the vaginal vault. On June 18, 1938, she reported again with a recurrence, for which sedatives were prescribed.

No response to follow-up inquiries was obtained, so death probably followed shortly after this patient's last visit.

CASE III.—Mrs. E.L., aged seventy-four years, who had had four children and no miscarriages, was referred on May 26, 1943. She complained of burning on micturition of ten years' duration and of hæmorrhage *per vaginam* of eight weeks' duration. The uterus had been removed "years ago for a growth on the womb". She had had a ventral hernia for ten years. On examination, she appeared senile and obese. She had a large irreducible incisional hernia at the lower end of the section scar. The vagina admitted two fingers; the *levatores ani* were separated. Halfway up the posterior vaginal wall there was a round, ulcerated area which bled on contact. The uterus had been removed. The rectum did not appear to be invaded.

On May 28, under ether anæsthesia, a biopsy was taken and radium needles were inserted into the ulcer (ten three-milligramme needles, which were left *in situ* for sixty hours). The total dose was 1,800 milligramme hours. The report on the biopsy specimen was: "Section shows masses of carcinomatous tissue, squamous cells of the transitional type." The patient made a good recovery, and reported again on September 1, when vaginal and rectal examination revealed no sign of a growth. She reported still later, on June 3, 1946, when she was again found to be free of recurrence.

On April 16, 1947, the patient reported complaining of pain on micturition. A hard, irregular lump was present on the right side of the vaginal introitus, probably a secondary deposit. No further treatment was suggested.

CASE IV.—Mrs. W.B., aged eighty years, who had had seven children and one miscarriage, was referred on September 13, 1946. She had old rheumatic endocarditis and superimposed hypertension. Two months previously she had had mild temporary left-sided hemiplegia, and on a check-up visit she reported a little vaginal hæmorrhage for the first time since the menopause. She stated that she had been wearing a pessary for fourteen years and had taken it out every night, reinserting it in the morning. For two weeks she had noticed hæmorrhage on reinserting the pessary. She complained of constipation and of some slight nocturnal frequency of micturition. On examination the patient appeared a frail old lady. Her blood pressure was 180 millimetres of mercury (systolic) and 110 millimetres (diastolic) and fibrillation was present, but compensation was fairly satisfactory. No abnormalities were noted in the abdomen. No glands were palpable in the inguinal regions. On vaginal examination the introitus was gaping, and the patient was wearing a ring pessary; a large cauliflower growth, bleeding freely, was felt on the cervix. Further examination was deferred till the patient was examined in the operating theatre, to prevent excessive bleeding.

On September 24, under "Pentothal" anæsthesia, the patient was found to have complete procidentia. The cervical os was healthy, and there was no discharge and no evidence of vaginitis; but on the left antero-lateral aspect of the vaginal surface of the cervix there was a large cauliflower growth, two inches in diameter, about one inch from the external os. Rectal examination revealed no involvement of the anterior rectal wall, and no involvement of glands was noted on combined deep pelvi-rectal examination. The uterus was curetted, but no material was obtained. The growth was curetted with a spoon and a biopsy was taken. Thirty milligrammes of radium were inserted into the uterus, and two twenty-milligramme radium needles in corks were inserted into the left antero-lateral and postero-lateral fornices. The total dose given was 3,000 milligramme hours. The report on the biopsy specimen was: "Section is that of a well differentiated squamous carcinoma."

On October 1, under "Pentothal" anæsthesia, radium needles were inserted into the ulcer (six three-milligramme and six two-milligramme needles). The total dose given was 4,200 milligramme hours for this second treatment. The patient made a satisfactory convalescence and reported again on October 25, when she stated that she had had no hæmorrhage or discharge and that the uterus had not prolapsed. On examination of the patient, the cystocele was well marked, but the uterus did not prolapse on coughing or straining. The site of the growth was represented by a linear raw area which appeared to be healing over well. Some thickening of the left parametrium was noticed. On November 21 the ulcer was healed, and she felt well. No glands were palpable in the inguinal region.

On January 9, 1947, the patient reported, stating that three days earlier the left leg and ankle had suddenly become swollen, but that the swelling had gone down a little. No vaginal recurrence was discovered; the patient was very constipated. After an enema, secondary malignant masses were felt on either side at the site of the obturator glands, approximately the size of a hen's egg. The left leg and ankle were slightly œdematous.

In view of her poor general condition it was decided not to give her any further irradiation. She gradually grew weaker, the fibrillation increased, and she had periods of coma which became more frequent, and in one of which she eventually died on February 5. It would appear that the malignant masses compressed the ureters and led to death from uræmia. She suffered no pain, and the œdema of the left leg did not increase any further before death.

Comment.

These cases bear out the description of symptoms and the results of treatment that have been put forward in the literature. However, there are several interesting features.

1. In Cases I and III hysterectomy had been performed ten and eleven years earlier respectively.

2. All patients had had large families, and in all there was some degree of prolapse or of gaping of the introitus. The patient in Case IV had complete procidentia. Her case was interesting, in view of the fact that although she had a large growth and had removed and reinserted the pessary every twenty-four hours, symptoms had been present for only two weeks.

3. Except for the patient in Case I, who complained of vaginal hæmorrhage and discharge of four years' duration, the history was of short duration.

4. Radiation treatment was the only method used, probably because the patients were elderly and in poor physical condition and radical surgery was impossible.

5. In Case III evidence of recurrence was shown three and a half years after treatment.

6. All the other patients are dead; in Case I recurrence took place in six months, in Case II in seven months and in Case IV in four months.

Summary.

A review of our present knowledge of the pathology and treatment of primary carcinoma of the vagina is given.

All writers agree on its rarity and on the poor results obtained with the present methods of treatment.

The cases encountered at the Royal Prince Alfred Hospital and at the King George V Memorial Hospital for Mothers and Babies over the years 1937 to 1947 are reported. These cases agree both in symptoms and in progress with those reported at other clinics.

Acknowledgements.

I am greatly indebted to my senior colleagues, Dr. F. A. Maguire and Dr. Clement Chapman, for permission to include their cases in this paper.

References.

(1) M. Moench: "Primary Epithelioma of the Vagina", *American Journal of Obstetrics and Gynecology*, Volume XXII, 1931, page 837.
(2) F. J. Taussig: "Primary Carcinoma of Vulva, Vagina and Female Urethra: Five Years' Results", *Surgery, Gynecology and Obstetrics*, Volume LX, 1935, page 477.
(3) J. Courtial: *Radiophysiologie et radiothérapie*, Volume III, 1938, page 577; quoted by M. Lederman and W. V. Mayneord, *loco citato*.
(4) M. Lederman and W. V. Mayneord: "The Radium Treatment of Cancer of the Vagina", *The British Journal of Radiology*, Volume XV, 1942, page 307.
(5) G. von Wolff: "*Pessareis und Scheidenkarzinom*", *Zentralblatt für Gynäkologie*, Volume LV, 1931, page 942.
(6) H. W. Johnston: "Primary Carcinoma of the Vagina with a Report of Three Cases", *The Canadian Medical Association Journal*, Volume XLVII, 1942, page 252.
(7) J. T. Williams: "Primary Carcinoma of the Vagina", *The New England Journal of Medicine*, Volume CCXII, 1935, page 156.
(8) H. R. Andrews: "Carcinoma of a Prolapsed Cervix in a Woman, Aged 77", *Proceedings of the Royal Society of Medicine*, Volume XVI, 1922, page 109.
(9) T. G. Stevens: "Squamous Epithelioma of the Vagina", *The Journal of Obstetrics and Gynæcology of the British Empire*, Volume XXX, 1923, page 42.
(10) E. Holland: "A Case of Primary Carcinoma of the Vagina", *The Journal of Obstetrics and Gynæcology of the British Empire*, Volume XXX, 1923, page 40.
(11) D. Dougal: "Primary Carcinoma of the Vagina Treated by Hystero-Vaginectomy", *The Journal of Obstetrics and Gynæcology of the British Empire*, Volume XXX, 1923, page 38.
(12) G. I. Strachan: "Adenocarcinoma of the Vagina", *The Journal of Obstetrics and Gynæcology of the British Empire*, Volume XXXIX, 1932, page 566.
(13) M. C. Piper: "Primary Diffuse Adenocarcinama of the Vagina", *American Journal of Obstetrics and Gynecology*, Volume XL, 1940, page 498.
(14) V. Bonney: "Adenomatosis Vaginæ: A Hitherto Undescribed Condition", *Proceedings of the Royal Society of Medicine*, Volume IV, Part II, 1911, page 18.
(15) B. Whitehouse: "Adenomatosis Vaginæ", *Proceedings of the Royal Society of Medicine*, Volume XVI, 1922, page 46.
(16) A. Plaut and M. L. Dreyfuss: "Adenosis of Vagina and its Relation to Primary Adenocarcinoma of Vagina", *Surgery, Gynecology and Obstetrics*, Volume LXXI, 1940, page 756.

TREATMENT OF VARICOSE VEINS BY HIGH LIGATION, SECTION AND INJECTION: AN INVESTIGATION.[1]

By O. M. Moulden,
Adelaide.

In this investigation 142 cases of varicosity of the long saphenous vein occurring in 125 patients treated by me by surgical measures during the last six years are considered. A complete history of each case has been kept as far as possible, and the result of treatment has been personally ascertained by means of a *questionnaire* or by clinical observation, or both, within the four weeks prior to this communication.

The object of this paper is to report the findings which emerge from a study of these recorded observations, to discuss in some degree their significance or importance, and to give the conclusions reached.

During the reading of my paper to the meeting of the Branch the anatomy of the saphenous tree was demonstrated by reference to illustrations by Spalteholz.[1] The mechanism involved in the venous return of the leg in normal cases and in cases of incompetency of the valves of the saphenous tree, causing varicosity, was demonstrated by reference to illustrations by Homans.[2] The effect of the reversed direction of blood flow in cases of valvular incompetency in causing anoxæmia with retention of metabolic products was described; this anoxæmia resulted in starvation of the tissues with loss of resistance to pathogenic organisms and consequent dermatitis and ulceration. With the purpose of avoiding reiteration, I would here refer readers to an original article by Lawes,[3] who gives an account of his experience in the investigation and treatment of varicose veins, and with whose most important conclusions I am in full agreement. He deals with "varicose anatomy" very fully by means of a series of phlebograms.

[1] Based on a paper read at a meeting of the South Australian Branch of the British Medical Association on April 24, 1947.

History.

Before the commencement of this investigation of treatment of varicose veins by high ligation, section and injection, there was a good deal of confusion regarding the best methods of treatment. Injections of sclerosing fluid, with or without support for the veins by means of bandages, elastic stockings, or Unna's paste stockings, were the treatment most commonly used. "Tying the vein" was being performed, usually at the highest point in the thigh at which the vein was evident. Excision of portion of the trunk of the long saphenous vein was practised and also avulsion of a portion of the trunk. Ligation of the long saphenous trunk at its upper end with subsequent injections of the saphenous tree as required was carried out and, I believe, is still being carried out.

Now all these operations commonly failed to effect a satisfactory final result because portion of the saphenous tree was left intact. The tributaries at the "bulb" were not ligated. They became potential channels of superficial venous return, and their connexions with branches of the trunk lower down eventually dilated and became varicose for the same reason that the original main trunk became varicose.

High ligation and section of the long saphenous trunk at or near its junction with the femoral vein, with at the same time ligation and section of the tributaries joining the trunk at its upper end or "bulb", and injection of sclerosing fluid distally into the cut end of the trunk, then became established. It was at this time, in 1940, that the English surgeon Dickson Wright[4] wrote of his experience of high ligation and section of the upper end of the trunk, and of the tributaries joining it, with injection of two cubic centimetres of the sclerosing fluid "Ethamolin" and subsequent injections of unthrombosed branches as required.

Methods Used in this Series.

Dickson Wright's method was adopted at the beginning of this series of cases; but as experience grew it was found that the incidence of recurrence or the persistence of varicosities at different levels of the saphenous tree was high and that complete cure by subsequent injection was difficult. The amount of sclerosing fluid injected was then increased gradually, until up to ten millilitres of "Ethamolin" were used, and results appeared to improve. As no ill effects of any consequence were noted, the amount was further increased, and for the last four to five years it has been my practice to use, as an average dose, twelve to fifteen millilitres and up to as much as twenty millilitres or more, according to my judgement of the capacity of the saphenous tree. My view is that for the best final results, and with the patient's viewpoint as regards total discomfort and period of disability borne in mind, the greater the proportion of the saphenous tree thrombosed by the original injection at the time of high ligation and section, the less need there will be for any subsequent treatment before a total cure is obtained.

I now aim at sclerosing the whole saphenous tree down to at least the level of the communicating vein above the ankle, so that the onus of the superficial venous return is thrown as evenly as possible on the smaller venules and capillaries.

This is the basis of the treatment I have used in this series, that is, the obliteration of as much as possible of

the whole saphenous tree by means of ligation and section at the sapheno-femoral junction, ligation and section of its tributaries at its upper end, and a large injection distally of sclerosing fluid.

It may here be noted that in this series of cases, in which the above technique has been used, there has been no instance of thrombosis of the deep venous system or of embolism resulting from dislodgement of portion of a thrombus in the superficial veins. It has not been found necessary to ligate a communicating vein between the superficial and deep venous systems, as a primary measure in any case.

Operation.

Local anæsthesia has been used in the great majority of cases, thirty to forty millilitres of a 0·5% to 1·0% solution of "Novocain" being injected. Particular care is necessary to infiltrate the tissues in the immediate vicinity of the "bulb" and down the main trunk for a distance of about two inches. If either of these is punctured, an annoying effusion of blood into the surrounding tissue occurs, and if any considerable quantity of the solution is injected into the lumen of the vein, faintness, sweating, nausea and vomiting may occur.

It is essential that the incision should be ample and correctly placed; it is impossible to recognize and isolate the tributaries unless this is done. The centre of the incision should be over the "bulb". Lateral localization of the "bulb" is made by palpating the femoral artery, which can invariably be felt pulsating when the patient is in the supine position. The "bulb" is half an inch internal to it. Vertical localization is made by pushing the forefinger from above downwards over Poupart's ligament, when it will be felt to sink into the *fossa ovalis* in the upper part of Scarpa's triangle. This is the level of the upper limit of the "bulb". This point on the skin is marked with Bonney's paint. An incision, three to four inches in length is made parallel with Poupart's ligament, with the above point as its centre. The subcutaneous fat, really corresponding to Camper's fascia, is incised, and the superficial fascia, that is, Scarpa's fascia, exposed. This is divided along the whole length of the incision and a layer of bright canary yellow fat is exposed in which the saphenous "bulb" and trunk lie buried. The *fascia lata* forms their bed.

The saphenous trunk is isolated by very careful blunt dissection and lifted up from its bed; and two ligatures of number 1 catgut are applied an inch apart about one and a half to two inches from the upper end of the "bulb". The vein is cut between these two ligatures. The upper cut end is grasped by forceps and lifted up gently; and, by careful blunt dissection, the "bulb", with the tributaries joining it, usually three in number, is freed from the surrounding tissues until the sapheno-femoral junction is seen. The tributaries, the superficial circumflex iliac vein externally, the superficial external pudendal vein internally, and the superficial epigastric vein, usually joining the middle of the upper part of the "bulb", are ligated in two places with number "0" catgut and cut. The "bulb" is then ligated, with number 1 catgut, at the sapheno-femoral junction, particular care being taken not to occlude the lumen of the femoral vein. A second ligature is applied immediately below this for safety. The "bulb" with the stumps of the tributaries is cut off.

By means of a 20-millilitre syringe and a long 19 or 20 gauge needle with a very short bevel the appropriate amount of "Ethamolin", usually about 12 to 15 millilitres, is slowly injected into the saphenous trunk below the ligature on its upper cut end. A ligature is tied just below the site of injection to prevent reflux of the "Ethamolin". Great care should be exercised in this injection, a slow, steady, gentle pressure being used.

The wound is then washed out with saline solution to remove any "Ethamolin" which may have escaped. The cut edges of the superficial fascia are apposed by a fine running catgut stitch, and the skin incision is closed with interrupted horsehair or similar sutures. A narrow, dry dressing is applied and fixed by a length of three-inch "Elastoplast", shaped at its inner end to fit the part.

With an ample incision and a knowledge of anatomy as detailed above there can never be any real difficulty in isolating the saphenous trunk.

It is my practice never to apply pressure forceps to the saphenous trunk or "bulb". These structures can be very fragile from degenerative changes and may readily tear.

In cases in which the saphenous trunk is partially thrombosed, although this may not be suspected, it may be difficult or impossible to inject successfully by the above method; in these cases the needle can be inserted into the lumen of the vein through its upper cut end and a ligature placed around the needle before injection is made.

The sclerosing solution "Ethamolin" has been used exclusively in this series of cases. It is a soapy solution—a synthetic product and a derivative of ricinoleic acid.

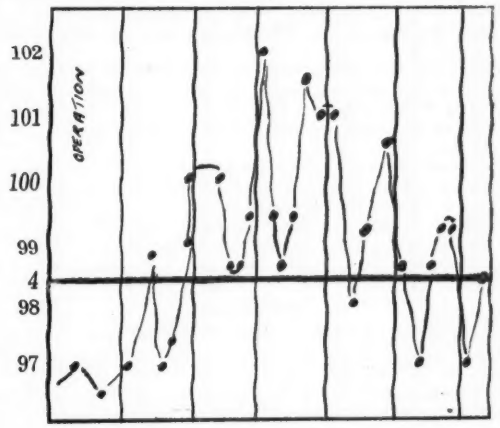


FIGURE I.

Temperature chart of a patient after high ligation and section of the long saphenous vein and tributaries joining the "bulb", and injection distally of seventeen millilitres of "Ethamolin". The vein was extremely dilated and its walls very degenerated.

Post-Operative Course.

Following the operation, the patient is preferably kept ambulant, with the idea of, at least theoretically, keeping up the rate of the deep venous return current and thus preventing the extension of thrombosis from the superficial to the deep venous system. When the rate of flow is kept up in the deep venous system any of the sclerosing fluid which may reach it is swept away, rapidly mixing with the blood, and causes no harm.

Following the injection of the appropriate dose of "Ethamolin", thrombophlebitis (chemical, of course) occurs in the saphenous tree, and this reaction, if it may be called so, should extend down to the ankle if the correct amount has been used.

The courses of the main trunk and its larger branches become evident, the thrombosed vessels becoming palpable within a few minutes of injection; the discoloration along the course of these vessels becomes visible, usually in the first twelve hours, and reaches its peak within twenty-four hours. There is a pinkish-brown staining due to seepage of the solution through the vein walls and its effect on the perivenous tissues; a bruised appearance results. This discoloration, at first linear, rapidly diffuses and lessens in intensity, and at the end of two or three days has almost disappeared, leaving the thrombosed vessels tender and with a cord-like feeling.

The general reaction may be considerable, and the temperature may rise to 101° or 102° F. on the second or third day, subsiding and becoming normal usually on the fourth day. Sometimes there is little or no general reaction. These general and local reactions as a rule, though not always, vary according to the amount of sclerosing fluid injected.

The degree of degeneration of the vein wall and consequent perivenous seepage of the sclerosing fluid causing

tissue reaction have, in my experience, a close relationship to the degree of local and general reaction. There is good reason to believe that the variation in the degree of these reactions is not of an allergic nature.

Pain over the course of the thrombosed trunk may be considerable, and may need appropriate drug therapy for its alleviation. Salicylates with perhaps Dover's powder are usually sufficient. The patient is encouraged by being told that the more pain he has, the better is the result to be anticipated.

The patient may leave hospital in three or four days and return for removal of sutures, or remain in hospital until this is done on the sixth or seventh day.

It may be thought that this is a formidable experience for a patient to have to endure for the cure of varicose veins, but I assure you that in the final assessment of the benefit he gets, compared with the total amount of discomfort he has to go through, he will be very satisfied and grateful.

The pain and tenderness rapidly subside and, as confidence in the limb increases, the patient is usually walking normally in about ten or twelve days. I have had numbers who have returned to heavy manual work in less than a fortnight.

As time goes on the thrombosed channels gradually diminish in size, and they finally disappear in a few weeks; although I have had cases in which the thrombosed main saphenous trunk has been palpable, but not tender, for as long as six months or more after operation.

In the great majority of cases the foregoing is the usual course of events.

DIFFICULTIES.

Occasionally, however, there are difficulties.

The first of these is a "failed injection" at operation. There have been ten cases in this series. When injection of the cut end of the main saphenous trunk, after division at the sapheno-femoral junction, is attempted it "blows back"—the trunk at the site of injection bulges. This means that there is an intact valve somewhere, most commonly at or near the mid-thigh, or about two inches above the knee. When this occurs, it is usually best to wait for three days or so and then carry out low ligation and injection. It is very interesting that it is at one of these levels that most gross recurrences terminate, and also that these are very common sites of a "blow-out" or large bulge in the main saphenous trunk with no evidence of a valveless trunk above it. This indicates without doubt that there is an intact valve in the saphenous trunk, and close below it a large communicating vein with a non-functioning valve. Thus in a case like this the upper main trunk and tributaries have been obliterated at the original operation but the valve has held up the downward injection; and it is necessary to carry out low ligation and injection to obliterate the remainder of the saphenous tree, in the manner described later in the consideration of recurrence. In these cases the highest point at which the impulse can be felt on tapping the varices in the lower leg is at the "blow-out".

An important point to remember in a case of "failed injection" is that no force should be used at the attempt to inject the "Ethamolin". If force is used the solution will be driven into the neighbouring subcutaneous capillaries, and will produce local staining of tissues and perhaps, as in one isolated case in my experience, sloughing of the skin.

Recurrence.

Recurrence or recanalization is, in my experience, most frequently due to the use of an inadequate amount of sclerosing fluid at the primary operation. Some varicose branches are not thrombosed because no sclerosing fluid has reached them, and they persist, increase in size, and become the starting point of recanalization of the thrombosed trunk above them. Also, some of the openings of the communicating veins may not have been occluded, or, if they have been occluded and deficient valves are present in them, they become recanalized; I think that this is probably a strong factor in recurrence. These are the cases where the use of a supporting bandage would have been of much value. If used and applied intelligently, it undoubtedly helps to prevent recurrence. I now use "Elastocrepe" bandages for three to six months following operation in all cases.

There are many forms of recurrence. A small isolated varix, say in the lower part of the calf, may appear and enlarge (sometimes it does not enlarge); but by far the commonest recurrence appears as a definite recurring trunk with branches, terminating at the opening of the large communicating vein in the mid-thigh or just above the level of the knee, as I have mentioned before, or sometimes just below the knee. This is the type which lends itself so admirably to low ligation.

Under local anæsthesia incision is made over the upper end of the varicose trunk as localized by tapping of varices lower down; the trunk is ligated in two places and cut between, and the appropriate amount of "Ethamolin" is injected distally. About eight to twelve millilitres is the average amount required to complete thrombosis to the ankle.

However, in spite of the presence of an impulse in the recurring trunk on tapping a varix lower down in the leg, it may be partially thrombosed; and so much so that it may be impossible to introduce the sclerosing fluid.

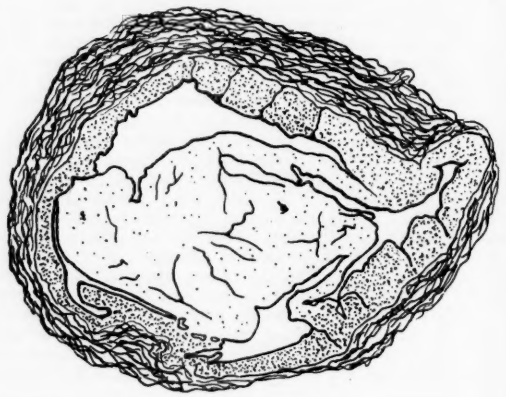


FIGURE II.

Photograph of tracing of projected section of thrombosed saphenous trunk showing the occurrence of recanalization.

So in these cases, before performing a low ligation, I always carefully locate the trunk and with Bonney's paint mark the exact line of incision at the highest point of election as previously described, and again at points, say two and four inches, below it. Then, if injection fails at the upper site, the lower one is incised and injection attempted, and if this fails the lowest is dealt with in the same way. By this means a satisfactory result can be obtained in the very great majority of cases.

However, in seven cases other difficulties have been encountered, and these will be considered fully in the study of the table of results of treatment under the heading of "Uncured Patients".

Difficulties and Abnormalities Met with during the Operation.

Ulceration.

When ulceration of the lower part of the leg is or has been present there may be much enlargement of the femoral lymphatic glands with much fibrous tissue formation surrounding them. One of the largest of these glands is frequently placed over the upper end of the saphenous trunk and may be adherent to it; it may need a very tedious and careful dissection to clear the trunk and "bulb". The gland should be excised. No cases of infection or lymphorrhœa have occurred when this has been done.

Ulceration of the lower part of the leg is not a contra-indication to operation, but when the ulcer is acute and has a sloughy base I think it better to clean it up by rest and saline applications before operation.

Anatomical Abnormalities.

An aberrant external pudendal artery is frequently met with, crossing in front of the "bulb"; this should be ligated and cut.

The saphenous trunk may be double and both branches should be injected after ligation. It is common for one or the other of the branches to have an intact valve, so that injection fails.

The superficial external femoral vein, which drains the outer aspect of the thigh, usually joins the saphenous trunk two to three inches below the "bulb"; but it may actually join the "bulb", and must be ligated and injected. It is sometimes the only varicose trunk, the main saphenous trunk being relatively small, and injection of it fails because of intact valves.

The number of tributaries joining the "bulb" and its neighbourhood varies considerably, and they may be numerous, up to a total of nine, the upper end of the trunk and "bulb" being more in the nature of a plexus.

The "bulb" may be enormously dilated with a very thin irregularly bulbous wall; this necessitates most delicate dissection to avoid tearing the wall.

Hæmorrhage.

In one case early in the series the "bulb" was torn by pressure forceps and copious hæmorrhage occurred, which could be arrested only by packing the wound tightly. The close proximity of the femoral vein makes the random application of pressure forceps dangerous. Since this incident I have made it a practice never to apply pressure forceps to the main trunk or "bulb".

Post-Operative Complications.

Hæmorrhage.

In one case early in the series there was an alarming hæmorrhage from the wound after the patient had left the operating theatre. This was due no doubt to the slipping of a ligature on the main trunk. It was arrested by pressure with a large pad. Thus it is wise always to double-tie the main trunk.

Wound Infection.

The wound broke down badly in seven cases as a result of infection. This occurred mostly in stout women with intertrigo, whose habits were not particularly cleanly. A hot bath before operation should be part of the routine. In these cases I have used a 1% solution of gentian violet for the skin for a day or two before operation, and have dusted the operation wound very lightly with sulphanilamide powder before closing; this has given satisfactory results.

RESULTS OF TREATMENT.

In this series 142 operations were performed on 125 patients. The present condition of the patients following 113 instances of the operation of high ligation is known, as a result of a recent *questionnaire* and personal clinical observation. The other patients failed to answer or to present themselves for examination for various reasons.

On studying the tabulated case sheets of these patients I have found it difficult to give a statistical table showing the true position, because many of the uncured varicosities are amenable to further treatment which could greatly improve or cure them. The patients whose present condition I have personally seen can be placed quite satisfactorily in the table, but it is difficult to place the patients whose present condition is known only by their answer to the *questionnaire*. Some of these no doubt could be improved (see Table I).

It will be seen that in 61% of the cases complete cure has been effected by high ligation as described in this paper. In a further 12·5% complete cure has followed an additional low ligation. In 23 cases, that is 25%, there have been recurrences needing further treatment. From my experience I feel safe in saying that 20 of these patients could be cured and three probably cured by further operation. Most of these patients are really subjectively cured. The recurrence is causing no trouble in the majority of them and consequently the patient may be loath to have further surgical treatment; but for the purpose of this paper they are shown as not being cured from a surgical point of view.

Uncured Patients.

In seven cases, or 6%, the patients are regarded as uncured, and these will now be discussed in detail.

Previous Inadequate Surgical Treatment.

Two of these patients had had operations which could not have included ligation and section of the tributaries joining the "bulb"; the operation scar was some inches below the "bulb". "Tying the vein" had probably been performed. Numerous dilated veins were visible coursing up the thigh in all directions making for communications

TABLE I.
High Ligation; Total Cases, 113.

Group.	Number of Cases.	Percentage.
Cure effected by high ligation ..	69	61·0 } 73·5
Cure effected by high ligation and low ligation	14	12·5 }
Cure not effected; further operation necessary	23	20·5
Cure not effected; further operation not indicated	7	6·0

with the superficial circumflex iliac and external pudendal tributaries and by-passing the tied main trunk. The result in these cases of high ligation, section and injection, as described in this paper, was a maze-like series of thrombosed vessels in the thigh, but the varicose condition persisted in the lower part of the saphenous tree.

After experiences such as these and possibly numerous previous local injections, patients may refuse further treatment; but in one case I was able to improve the condition further by ligature and injection at lower levels. However, they must be put down as "uncured". The following is an example.

CASE CX.—A female, aged fifty-six years, had had varicose veins for eighteen years, since her last confinement. Both legs were affected, the right more than the left. She had had numerous local injections in both legs. In 1936 the left vein was tied and cut. It is not known whether injection was made. In 1940 the right vein was tied and cut. In 1944 examination revealed extensive bilateral recurrences. There was a maze-like mass of dilated veins in the right thigh. The two largest of these, in the upper part of the thigh, were ligated and cut, and small injections were made into them. At a level one inch above the knee a definite trunk could be made out. This was ligated and cut, and six millilitres of "Ethamolin" were injected distally. Thrombosis was evident down to the lower part of the calf. On the left side a high ligation was attempted. The upper part of the saphenous trunk was represented by dense fibrous tissue only; the upper few inches of the trunk above the operation scar had thrombosed and become organized. The main trunk was ligated and cut three inches above the knee, and eight millilitres of "Ethamolin" were injected distally. Thrombosis became evident to just above the ankle. On the right side, a large recurrent trunk two inches below the knee on the inner side of the calf was ligated in 1945 and cut, and six millilitres of "Ethamolin" were injected distally. In 1946 there were multiple recurrences in the right thigh and leg. Numerous local injections were given. At the present time the leg is reasonably comfortable, an "Elastocrepe" bandage being worn, but I fear the recurrences will keep on appearing and needing to be injected for an unknown period. However, a further exploration of the region of the bulb may reveal some patent tributaries which could be ligated and cut and injected, and perhaps improve the outlook. The communications with the gluteal vessels could also be cut and ligated and injected.

The condition of the left leg is satisfactory.

Chronic Lymphangitis.

In two cases before operation the leg was swollen and hard and showed little pitting on pressure; it was much like a case of femoral thrombosis. However, both patients

had extensive advanced ulceration, which was resistant to any form of treatment. A full high ligation had no effect whatever on the condition present and no further operation is indicated. I regard these as cases of chronic lymphangitis with lymphatic block.

Femoral Thrombosis.

In two cases a full high ligation was followed by general swelling of the leg. In one of them the swelling had disappeared in six months and the leg was in much the same condition as before the operation. The patient has remained reasonably comfortable since by wearing an "Elastocrepe" bandage, and has remained free from ulceration. The other case was similar, but ulceration keeps on recurring.

I feel sure that the explanation of these cases is that the patients' deep venous return was impaired and that this condition existed before the operation. Both patients had histories suggestive of femoral thrombosis. They were both encountered very early in this series and were badly selected cases.

Recurrence of Unknown Origin.

The following history is of the last patient who is considered "uncured", although future treatment may overcome the difficulty.

CASE CXXIV.—A male, aged twenty-four years, had had varicose veins in the right leg since he was ten years of age. They had appeared to enlarge in the last twelve months. They were causing no trouble, and treatment was desired on account of their appearance. On examination, both right and left long saphenous trunks had incompetent valves. On December 21, 1945, high ligation was performed, four tributaries joining the "bulb" were ligated and cut, and 14·0 millilitres of "Ethamolin" were injected distally. Reaction along the course of the main trunk was visible to just above the ankle. General reaction was considerable, the temperature rising to 101° F. on the third day. Five months later the condition of the patient's saphenous tree was exactly the same as before the operation.

It seems to me that injection of "Ethamolin" gave this patient a phlebitis and no thrombosis; and, in view of his age and history, it seems that the most probable explanation is that he had had a deficiency of the valves of the communicating veins since his early youth, perhaps since birth. He is submitting to further operation shortly, and it will be very interesting to see what has happened in the neighbourhood of the sapheno-femoral junction.

Comment.

It is appropriate here to record that in this series of cases there has been no mortality. It will be seen from this analysis that if cases are carefully selected there should be very few if any failures.

OTHER OBSERVATIONS.

Sex Incidence.

In this series there were 41 male and 84 female patients.

Age.

The youngest patient was seventeen years of age, and the oldest seventy-seven. Age of itself has not proved a contraindication to operation. Under favourable conditions the old people stand it quite well.

Distribution.

The right saphenous tree was varicose in 84 cases and the left in 103 cases, and the condition was bilateral in 60 cases. In four cases the short saphenous vein was varicose up to its termination in the popliteal space.

Ætiology.

No particular type of occupation appeared to favour the onset of the condition. The incidence was the same in sedentary and non-sedentary workers. Pregnancy, however, has proved a very potent factor.

A family history of varicose veins was present in 80% of recorded cases in this series. Some of the family histories were remarkable. It would seem that here is an excellent field for the study of human genetics. Some innate factor must have an immense influence on the incidence of the condition. Perhaps some hereditary factor concerned with the structure of the vein walls is involved.

It will thus be seen that a pregnant woman with a family history of varicose veins is the most likely person to develop the condition.

Skin Lesions.

In 64% of cases there was dermatitis of the lower part of the leg of greater or less degree. In 54% there was ulceration of the lower part of the leg.

The healing of chronic varicose ulceration following full high ligation may be dramatically rapid. In a very few weeks, occasionally months, the great majority of ulcers have healed. The hopeless outlook for cure of a varicose ulcer without first obliterating the varicose condition present has been well demonstrated in this series.

SUMMARY.

An analysis of the findings in a series of 142 cases of high ligation, section and injection of the long saphenous vein, performed on 125 patients suffering from varicose veins, is given.

An account of the operative procedure used and the post-operative clinical course is given.

Difficulties in treatment and seven "uncured patients" are discussed.

Various other findings are noted.

REFERENCES.

(1) Werner Spalteholz: "Hand Atlas of Human Anatomy", Fifth Edition in English, Volume II, pages 488-490.
(2) J. Homans: "Varicose Veins and Ulcers", "Nelson's Surgery", Volume III, page 729.
(3) C. H. Wickham Lawes: "Some Problems of Varicose Veins", THE MEDICAL JOURNAL OF AUSTRALIA, Volume II, 1946, page 685.
(4) A. Dickson Wright: "Treatment of Varicose Veins", *British Medical Journal*, April 20, 1940, page 665.

A WATER-DRIVEN RESPIRATOR.

By P. R. BULL, M.B., B.S.,
Resident Medical Officer, Austin Hospital, Heidelberg, Victoria.

THE possibility of electric power blackouts or power failures and consequent embarrassment to respirator patients stimulated research into alternative means of driving respirator units in the event of such failures. Mr. E. Cartwright, chief engineer of the Austin Hospital, undertook this research at the request of the Committee of Management of the hospital, and has perfected a water-driven unit which is simple to operate and has many advantages as outlined below.

At the outset it must be stated that all the credit for this invention must go to Mr. Cartwright and his team of engineers, and it is considered that the advantages of the unit and its description can best be given in Mr. Cartwright's own words, which are as follows:

When the machine was designed, careful consideration was given to alternative supplies of power; steam, petrol engines and water were investigated. The chief objections to steam were noise and exhaust gases; to petrol, starter trouble and carburetter trouble, particularly in a motor used at infrequent intervals. The water method had so many advantages, plentiful supply of power, cool to operate, quiet to run, immediate starting, no specialized knowledge required by nursing staff to maintain running and regulation of pulsator, that this method was chosen for further consideration. The first results, using a single acting ram and spring return, were very satisfactory, but it was found that as the spring relaxed, the force of the return diminished and there was consequent lag at the end of the inspiratory phase of the cycle. The double acting ram was then devised, and it is this mechanism that is now in use.

The machine consists of a rubber and fabric bellows (A), connected to the respirator chamber which is of the ordinary Drinker or Nuffield type. Fitted to the bottom of the bellows

are two shafts, a central driving shaft (B), from the ram (C), and a lateral shaft (D), activating the spring-loaded bridle (E), by means of two adjustable collars (I). The ram is controlled by an inside piston valve (H), which is activated by the spring-loaded bridle connected to the bellows; the movement of this valve directs the water to either side of the ram, giving the reciprocating motion to the bellows.

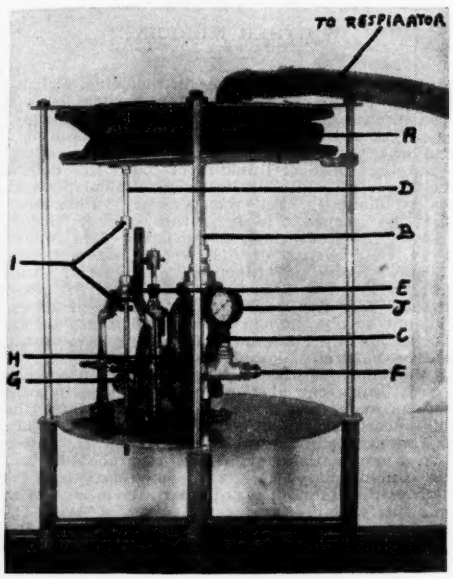


FIGURE I.

Mechanism of "Cartwright Pusator" (for description see text). A, rubber and fabric bellows; B, central driving shaft; C, double-acting ram; D, bridle-activating shaft; E, spring-loaded bridle; F, water inlet; G, water outlet; H, piston valve; I, collars (adjustable); J, water-pressure gauge (not essential).

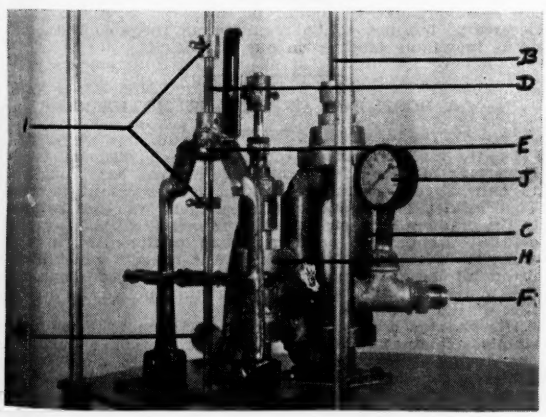


FIGURE II.

Mechanism of "Cartwright Pusator" (for description see text). B, central driving shaft; C, double-acting ram; D, bridle-activating shaft; E, spring-loaded bridle; F, water inlet; G, water outlet; H, piston valve; I, collars (adjustable); J, water-pressure gauge (not essential).

The machine will start instantly from any position and has a margin from 0-40 strokes per minute; the efficiency is equal to an electrical unit. The exhaust water can be used for boiler feed or carried to flusher tanks. The present water consumption is three and one-half gallons per minute at twenty-eight strokes per minute, and the water must be supplied at a minimum pressure of forty pounds per square inch; it is thought, however, that the water consumption may be reduced considerably with further experiments.

It will be seen from Mr. Cartwright's description that this invention is an epoch-making one, which will enable hospitals to have an efficient and easily operated emergency respirator unit especially useful for country districts.

In action the respirator is almost silent, and those patients who have "tried it out" under the writer's supervision have found it most satisfactory. With a well-fitting air-tight collar a negative pressure of fourteen inches of water can be attained at a rate of twenty-four strokes per minute.

Although it was originally decided not to patent this invention, on further consideration a provisional patent has been applied for, so that the Austin Hospital will be able to control the price of the pulsator to those who wish to use the machine for medical purposes. To that end

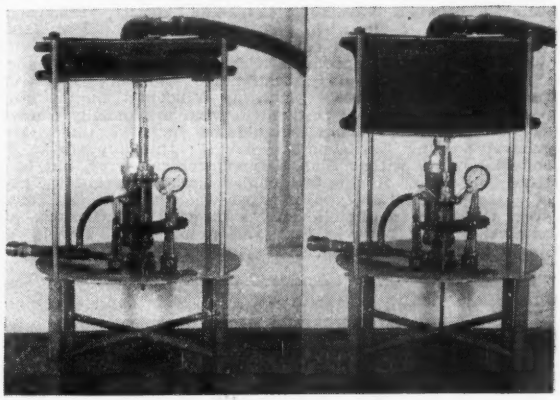


FIGURE III.

Photographs to show two positions of spring-loaded bridle.

Mr. Cartwright or the writer will be pleased to supply any further information to any hospital or similar institution which desires to copy the invention. It is considered that the machine could easily be made in the engineering shops of most hospitals.

Acknowledgements.

In conclusion, the writer wishes to thank the inventor himself and Mr. A. F. Cameron, manager and secretary of the hospital, for permission to publish this report. Thanks go also to Mr. C. Young for the photographs of the pulsator machine.

Reviews.

A YEAR BOOK OF THERAPEUTICS.

EVEN a casual perusal of "The 1946 Year Book of General Therapeutics" provides striking evidence of the modern tendency to concentrate on specific therapeutic agents and also of the number of such effective agents which have quite recently been evolved.[1] Thus the arrangement of the book is in terms of drugs rather than diseases or systems. The main subdivisions deal with general therapeutic technique (a very short section), antipathogen therapy (including the sulphonamides and antibiotics, vaccines and serological agents, antiparasitic and antisyphilitic drugs, drugs used in the treatment of rheumatic conditions and gout, and the recent treatment of burns), restoratives (agents for the treatment of blood deficiencies, hormones and vitamins), function modifiers (anæsthetics, sedatives, hypnotics and antispasmodics, thiouracil, thiourea and iodine, and drugs acting especially on the autonomic nervous system and on

[1] "The 1946 Year Book of General Therapeutics, November, 1945, to August, 1946", edited by Oscar W. Bethea, Ph.M., M.D., F.A.C.P.; 1946. Chicago: The Year Book Publishers, Incorporated. 7" × 4¾", pp. 542, with illustrations. Price: $3.75.

the heart and blood vessels), and finally a short section on miscellaneous considerations. The editor, Oscar W. Bethea, a member of the Revision Committee of the United States Pharmacopœia, 1930-1940, and retired Professor of Clinical Medicine of the Tulane University School of Medicine, contributes a short introduction to the book, useful summaries of significant advances in the main sections and occasional comments on individual contributions. The editorial summaries, which are concise and to the point, will be found helpful by busy readers, especially in regard to the voluminous literature on some of the more important recently developed drugs such as streptomycin. The literature covered is predominantly North American, but a fair sprinkling appears of significant articles from British journals. The only Australian paper noted is the report by Alex. Murphy, of Brisbane, on sudden death following the initial injection of a mercurial diuretic. However, the general selection from current literature appears to have been wisely made and all significant therapeutic advances recorded between November, 1945, and August, 1946, seem to have been dealt with. A minor typographical fault appears in the table of contents where "amino acids" and "blood transfusions" appear as if they are subheadings under "folic acid". It is also questionable whether papers on "miscellaneous diseases" (such as Vincent's angina and relapsing fever), which respond to what are usually classed as "antisyphilitic" drugs, should be included under the general heading "antisyphilitic drugs"; this appears to be editorial policy rather than a typographical error, but is a trifle confusing. A note is included explaining that the use of a slightly inferior type of paper was unavoidable. However, these are negligible defects in what is otherwise an admirable book both in text and production. It will be found useful by all medical practitioners.

HORMONES IN REPRODUCTION.

DR. JULES SAMUELS, who from his titles seems to be both surgeon in a women's hospital and physician specialist in endocrine therapy in Amsterdam, has published two companion volumes, one, "The Hormonal Aspect of the Reproductive Process", and the other, larger and later, "The Hormonal Maintenance of the Fœtus".[1] The main text in both is in German, but the summaries have been translated into English, French and Dutch. It is told of Douglas Jerrold that when recovering from an illness he was given Browning's "Sordello" to review. After reading a few pages and understanding nothing he was seized with the horrible suspicion that he had lost his reason during his sickness; from this anxiety he was rescued by his wife taking up the volume, and then, after a vain attempt to comprehend even a few lines, throwing the book down in disgust. Should a medical practitioner in an English-speaking country open one of these volumes during a convalescence he might easily be assailed by the same fear on reading such a sentence as this: "At the fertilizing process the amphimixis or the oogamic gametogony, the spermatozoon, resp. the spermatozoa, supply exclusively or mainly with the free division-hormone which sets loose the eggcelidivision." Apart from the general obscurity of the presentation the text in both volumes contains an irritating number of abbreviations requiring constant reference to an explanatory table. Some of the so-called abbreviations are as long as the terms they denote. Why, for instance, should secondary hyperfunction of the thyreotrophic agent be represented as $|\underline{\underline{ThC}} + Th \pm GC - \underline{G}\text{—}|$, giving headaches to the compositor?

There is a rather lengthy review of the part played by hormones in the reproductive processes in the lower animals and in the human. The main conclusions may be given as three in number. First the active cell division of the fertilized ovum arises from the stimulus given by a hormone which is supplied by the spermatozoon, but there is in addition the same hormone in the ovum mostly in the form of an inactive precursor; this precursor can be changed into the hormone promoting cell division by the entry of the spermatozoon or even by the prick of a needle. The author takes the view that lack of supply of this hormone may be the cause of certain forms of sterility. The second contention is that the luteinizing hormone and the thyreotrophic of the anterior lobe of the pituitary are identical. It may be noted here that all through both books "thyreotrophic" is given as "thyreotropic". The third conclusion is that when the placenta appears it gradually takes over the function of the anterior lobe of the pituitary in producing gonadotrophic hormones so that as the placenta develops the anterior lobe of the pituitary displays a progressive falling off in its output of gonadotrophic hormones. The whole subject is difficult, but we cannot help feeling that this learned author has added considerably to the difficulties.

[1] *"Die hormonalen Aspekte des Fortpflanzungsprozesses"*, by Jules Samuels; 1946. Amsterdam: Holdert and Company, N.V. 9½" × 6¼", pp. 158. *"Die Hormonversorgung des Fœtus"*, by Jules Samuels; 1947. Leiden: E. J. Brill. 9½" × 6", pp. 328.

WHITHER MEDICINE?

ANTONY FIDLER, senior lecturer in medicine, Polish School of Medicine, Edinburgh, has written a little book dealing with the application of scientific method to medicine.[1] The outlook of the author is philosophical, and his design is the substitution of science for dogma. In the introduction he points out that medical thinkers of today are determinists, and endeavour to relate the cause of clinical phenomena to theories of disease. For the present system of "causal medicine" he purposes to substitute one of "medicine of probability". Some difficulty is encountered in following his thesis, by very reason of his earnest attempts to define such general terms as "function" and special terms such as "antibody". All will agree with him that the presence of an antibody does not imply that it has been produced by bacteria, but surely such instances, which can be multiplied in medicine, merely show how the incomplete, unstable and provocative nature of most of our current "beliefs" are one of the spurs of the researcher. Fidler examines the validity of some causal factors which are hypothetically accepted as such, and shows how undependable they are. For this uncertainty he would establish a more rigid system of experimental clinical method, and thereby attempt to lay down a more satisfactory degree of probability as a basis for our conclusions. He gives some statistical tables to demonstrate the comparative standard deviations in material with multiple variable factors. But after studying this book it is hard to see that the author really differs in his ideals from any competent medical investigator who can and will view the field of medical science from the broad philosophical aspect. To foster this viewpoint is good, more than ever we need it; we must, however, be careful that we do not allow the spirit that denies to blunt the keen edge of an inquiring mind. Many a useful piece of knowledge has been gained through the work of an inquirer whose original premises were wrong, though this should not delude us into sloppy thinking or facile definition. Without being frivolous it might be permissible to regard dogmas as we might our relatives, part of us, inescapable, and at times necessary, but not to be regarded as the sole authorities or as inevitably binding on our beliefs.

A BOOK FOR EXPECTANT MOTHERS.

IN the eighth edition of his booklet, "Advice to the Expectant Mother", Professor F. J. Browne has brought up to date a very useful publication for expectant mothers.[2] The booklet is intended to supplement the advice given to the mothers by their own doctors or midwives. It gives a detailed account of pregnancy and confinement in clear and simple language and explains the benefits which proper pre-natal care confers upon mothers; it also emphasizes the mother's responsibility during this period as well as that of the doctor.

His chapter dealing with the mechanism of labour is so simply explained that any expectant mother should have her doubts or fears removed. The booklet aims at, and achieves for its readers, a healthy understanding of the processes of pregnancy and confinement and how to care for the young baby.

The section on wartime baby clothing is intended for those living in the United Kingdom who are more severely rationed than those in the Dominions.

The book is carefully indexed and easy to read and suitably divided into appropriate sections dealing with the benefits of pre-natal care, normal pregnancy and its hygiene, the common disorders likely to occur in pregnancy, an explanation of labour, how to prepare for confinement and hints on breast feeding and how to care for the baby.

[1] "Whither Medicine: From Dogma to Science?", by Antony Fidler, M.D.; 1946. London, Edinburgh, Paris, Melbourne, Toronto and New York: Thomas Nelson and Sons, Limited. 8" × 5¼", pp. 128. Price: 6s.

[2] "Advice to the Expectant Mother on the Care of Her Health and that of Her Child", by F. J. Browne, M.D., D.Sc., F.R.C.S.E., F.R.C.O.G.; Eighth Edition; 1947. Edinburgh: E. and S. Livingstone, Limited. 7¼" × 4½", pp. 50. Price: 9d.

The Medical Journal of Australia

SATURDAY, AUGUST 23, 1947.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

A CONTRIBUTORY MEDICAL BENEFITS FUND FOR NEW SOUTH WALES.

For some years the New South Wales Branch of the British Medical Association has been trying to devise means by which the members of the community could meet the rising costs of medical care. Readers of this journal do not need to be reminded that the provision of medical care has become so complex that for certain types of illness only the really well-to-do and patients in public hospitals can have all their needs met in the spheres of medical diagnosis and treatment. The Branch saw that what was required was some method by which members of the community could be attended by the doctor of their choice and receive at his hands any necessary treatment, together with the attention of consultants and specialists and the benefits of ancillary laboratory services when these should be called for. The Branch wished, as has been abundantly shown in the pronouncements of the Federal Council, to preserve at the same time the present method of private practice. That a voluntary organization could deal successfully with at least one of the health problems of the individual was shown by the extraordinary success of the Metropolitan Hospitals Contribution Fund of New South Wales, and this not unnaturally gave the Branch Council a good deal of encouragement. The Bankers' Health Society, which was founded for the benefit of the staffs of various banks and was subsequently extended in its scope, gave an indication of what could be done. At length the Medical Benefits Fund of New South Wales, Limited, was brought into being, and, as was announced in a recent issue of this journal, has commenced its operations. Members of the New South Wales Branch are, or should be, familiar with the set-up and the method of working of this fund—they have been approached individually by the Branch Council and more than a thousand of them have become "members" of the fund. That members of other Branches may learn something about this new organization, the following statement has been prepared.

The fund has been registered under the *Companies Acts* of New South Wales as "a company not for profit, limited by guarantee and not having a share capital". Members of the company are of two kinds, medical members and contributing members. Medical members are members of the medical profession in New South Wales who are accepted for membership and who contribute the sum of ten pounds to provide for the establishment and development of the company. This sum is the total liability of the medical members. It is expressly laid down that any surplus amounts that accrue to the fund as a result of its operations will be used for the provision of extended benefits to the contributors in such a way as the Executive Committee of the fund may from time to time determine. One of the methods for the application of the funds is to create a reserve for contingencies, particularly in connexion with epidemics of illness or disease in the community. Contributory members must be under sixty-five years of age. A contributing member who is resident in New South Wales or in the Australian Capital Territory may become a contributor. Before he is admitted as a contributor he has to sign a form of application for admission and has to give such information as may be required of him. He may have to furnish evidence of his own good health or of that of his dependants, and he or his dependants or both may have to undergo a medical examination. In most cases an examination will not be necessary. If the applicant's health is not satisfactory he may still be admitted as a contributor under such special conditions as the council of the fund may determine. A contributor's dependants have to be registered with the association (that is, the fund). The amount of contributions depends on the group into which the contributor is classified. There are three groups. Group A comprises unmarried males or unmarried females (not being dependants) who are under the age of twenty-one years; they pay one shilling a week, or £2 10s. a year. (They and those of other groups may pay every four weeks, quarterly or half-yearly.) Those in group B comprise unmarried males or unmarried females, twenty-one years of age and over, and widowed persons without dependants; they pay one shilling and sixpence a week, or £3 15s. a year. Contributors in group C comprise married males or married females with or without dependants or widowed persons with dependants; they pay three shillings a week or £7 10s. a year. The benefits cover the following services: (*a*) general practitioner services; (*b*) specialist services; (*c*) surgical treatment in hospital; (*d*) surgical treatment at place of residence or at the surgery; (*e*) obstetric treatment in hospital or at the place of residence; (*f*) physiotherapy; (*g*) diagnostic services; (*h*) anæsthetists' services. The amounts of the benefits are of the following order. For general practitioner services the sum of seven shillings and sixpence is available in respect of each attendance. A limit of £15 15s. is placed on this service for any one year for any one person. For specialist services the amount available varies between £1 1s. and £3 3s.; the limitation for any one year is the same as for general practitioner services. In regard to surgical treatment in hospital the contribution towards the surgeon's fee for each admission to hospital varies according to the schedule in which the operation appears and ranges from £2 2s. to £26 5s. There is a fifth

schedule in which an amount is fixed for particular operations. For ordinary confinements the benefit is £5 5s. In physiotherapy the benefit is seven shillings and sixpence for each treatment administered by the medical attendant, with a limitation of £1 10s. in one week and £4 10s. in any one year. Diagnostic services cover the use of X rays, biochemical investigations and pathological examinations. In respect of each of these £5 5s. is available in any one year. Anæsthetic fees are covered by £1 1s. to £2 2s. for minor operations and £3 3s. for major procedures. It is specially to be noted that the benefit is provided in one of two ways. Either the amount of the benefit is paid on the authority of the contributor to the attendant practitioner by whom the service has been rendered on account of his charges for such service; or payment is made to a contributor who has previously paid the medical practitioner's account in full. Among the conditions causing exclusion from benefits are: (*a*) any illness whose symptoms are in evidence at the time of the contributor's joining; (*b*) tuberculosis, X-ray examination of teeth and eye refraction; (*c*) alcoholism, drug addiction and certified mental disorders; (*d*) examination for life assurance and certificates of health; (*e*) accidents, illnesses and so on for which compensation is payable. A final point to be noted about this benefit fund is that the business administration is to be conducted by the Metropolitan Hospitals Contribution Fund of New South Wales.

In drawing attention to this new benefit fund, the New South Wales Branch of the British Medical Association points out that it has made an attempt to provide a service that is within the means of a large number of people in the community. The essential features may be summed up in the following sentences. The fund is created and controlled by the medical profession itself. The scheme is neither a commercial enterprise nor a charity; it is really a scheme of insurance, a cooperative effort, and after immediate expenses are made any surplus will be applied to the increase of benefits. There will be no interference with the relationship between the doctor and his patient; every contributor may choose his own doctor and his own hospital. No person will be debarred from becoming a contributor by reason of his income—there is no "income limit".

Current Comment.

TUBERCULIN INACTIVATED BY CRUDE PENICILLIN.

SOME interesting experiments which seem, in view of their possibly far-reaching importance, to require confirmation and further investigation of the chemical or physical processes involved have been reported by P. Hauduroy and W. Rosset, of the Institute of Hygiene at Lausanne.[1] These workers sought to discover what would be the action of penicillin upon tuberculin. Their inspiration to do so was derived from the work of G. Ramon, who had shown that antibiotic substances, such as subtilin or crude penicillin, had the property (which he called the antidotal property) of inactivating the toxins of diphtheria bacilli and staphylococci. No reference to the place of publication of Ramon's work is given and it does not seem to have yet reached this country, but the same subject has been tentatively explored in a preliminary report by G. Ramon, R. Richou and P. Ramon.[2]

[1] *Revue de la tuberculose*, 1946.
[2] *Revue d'immunologie*, 1944-1945.

Hauduroy and Rosset added undiluted old tuberculin to nine times its volume of the filtrate from a culture of *Penicillium notatum* and kept it at a temperature of 37° C. for a period of from six to forty-eight hours: some of the mixture was then injected subcutaneously into guinea-pigs which had been infected with tubercle bacilli six weeks previously. The guinea-pigs survived. When as a control experiment the undiluted old tuberculin was similarly added to a solution of the calcium salt of penicillin, or to physiological solution, and after incubation was injected in the same way into guinea-pigs, all the guinea-pigs were dead within twenty-four hours. In further experiments it was found that old tuberculin diluted with the filtrate from a culture of *Penicillium notatum* was no longer capable of eliciting the tuberculin reaction when injected intracutaneously into tuberculous animals, although the same animals might have reacted to tuberculin in the typical way when tests were made on previous occasions. Dilution of the tuberculin with a solution of the calcium salt of penicillin or with physiological solution did not impair its power to elicit the intracutaneous tuberculin reaction.

It was decided now by Hauduroy and Rosset to try whether a similar inactivation of tuberculin to that produced *in vitro* could be brought about in living animals. They injected some tuberculous guinea-pigs twice daily for several consecutive days with two millilitres of crude filtrate containing twenty units of penicillin and others with one millilitre of a solution of the calcium salt containing 1,000 units of penicillin. On the third day of the injections they administered to each animal, and also to control animals which had received no penicillin, an injection of 0·2 millilitre of tuberculin added to 1·8 millilitres of diluent. The control animals and those which had received the calcium salt of penicillin soon died. Of those which received the crude filtrate, one died within twenty-four hours and two survived.

A serious flaw in these experiments is the small number of experimental animals used, and it would be a mistake to accept the work without confirmation as the results could have been due to a not very long chance. But if the results can be confirmed they are momentous and make it seem that we stand on the threshold of a new approach to the conquest of tuberculosis allergy.

THE ASSESSMENT OF ACUTE BLOOD LOSS.

IT is generally appreciated that reduction in the volume of circulating blood is the significant effect of acute blood loss from the point of view of the patient's immediate welfare. As means of assessing the reduction, counts of red blood cells, estimations of hæmoglobin content and hæmatocrit readings are fallacious for several reasons, the most important being the fact that these data are unaffected by massive hæmorrhage until hæmodilution has occurred. This fact was recorded and discussed by R. J. Walsh and A. K. Sewell in an article in this journal on January 19, 1946. Standard methods of estimating the blood volume are time-consuming and present technical difficulties that prejudice their use in routine clinical practice. Measurements of pulse rate and blood pressure are recognized as unreliable criteria. A test has been devised by D. M. Green and David Metheny[1] which appears to provide information of practical value. The subject is placed horizontally on a table which can be tilted, and measurements of pulse rate and blood pressure are made and repeated until constant. The table is then tilted to an angle of 75° (the patient's feet being directed downwards) and similar measurements are carried out. The test was first performed on a series of normal subjects, and then on subjects affected by old age, cardio-vascular disease, chronic anæmia, controlled acute blood loss and recent gastro-intestinal hæmorrhage. The increase in pulse rate (which appeared to be the measurement of practical significance) on tilting individuals in the normal, aged, cardio-vascular disease and chronic anæmia groups never exceeded 25 beats per minute. It always exceeded this figure following a blood loss of one litre. An increase

[1] *Surgery, Gynecology and Obstetrics*, June, 1947.

of thirty beats or more per minute was noted in ten of eleven subjects in this latter group, while only one of nineteen subjects who had lost half a litre of blood manifested a similar rise. A secondary syncopal reaction was observed in four of five individuals who lost an average of one and a half litres of blood, while it occurred in but four of thirty deprived of half to one litre and in no individuals other than those subjected to acute blood loss. The tilting responses of individuals who had lost one to one and a half litres of blood returned to normal in from twenty-four to seventy-two hours; this was associated with a drop in the average hæmatocrit value from 47% to 38%—an indication of the associated compensatory hæmodilution. Green and Metheny conclude:

> 1. An increase in cardiac rate less than 25 beats per minute on tilting, in the absence of a syncopal reaction, indicates either a negligible or a compensated acute blood loss. Transfusion is not required as an emergency therapeutic measure. . . .
> 2. An increase in cardiac rate on tilting of 30 beats or more per minute suggests a blood volume deficit of 9 to 14 cubic centimetres per kilogram and a probable transfusion requirement of 1,000 cubic centimetres.
> 3. The occurrence of a syncopal reaction to tilting suggests a probable blood volume deficit of 14 to 20 cubic centimetres per kilogram and the advisability of a transfusion of 1,500 cubic centimetres.
> 4. The presence of shock in patients maintained in the supine position indicates a probable blood volume deficit in excess of 20 cubic centimetres per kilogram and a need for transfusion of 2,000 cubic centimetres or more.

Certain objections to the use of this test immediately arise. The most obvious is that seriously injured and shocked patients should not be exposed to all the extra manœuvring involved in the test; the treatment of such patients, however, can as a rule be determined on clinical grounds so that the objection lapses. Others will object to the substitution of yet another "special test" for clinical judgement; but the fallacies of clinical criteria have already been pointed out and there are certainly occasions when supplementary evidence is welcome. It would be absurd to consider the routine adoption of such a test as this, but it seems to warrant further consideration as an aid in assessing that "border-line case" in which the wrong clinical decision can cost so dearly.

SURGERY IN NORTH AMERICA.

THE American College of Surgeons held its thirty-second annual clinical congress at Cleveland, Ohio, in December, 1946. In actual fact this "annual" congress had not been held since just before the Pearl Harbour incident, so that there was an excellent opportunity for those presenting papers to summarize the advances that had taken place during the busy intervening period. This opportunity was seized and the proceedings of the congress, which occupy a special and much enlarged number of *Surgery, Gynecology and Obstetrics*, provide a valuable record of recent surgical progress.[1] The retiring President of the College, W. Edward Gallie, of Toronto, Canada, who had held office throughout the war period, described the rise of the American College of Surgeons and its work to raise the standard of surgery in North America. The main subject of his address, however, was a constructive discussion on the training of surgeons with particular reference to methods adopted in Toronto and experienced gained. He stressed the importance of adequate facilities for basic post-graduate training in subjects such as anatomy and applied physiology, of a high standard in examination of those desiring recognition as surgeons, and, in particular, of the provision of really adequate opportunity for surgical apprenticeship. The vision and withal the grasp of practical realities in this address are most stimulating.

Another address of unusual interest is that given by Edward D. Churchill on "the accomplishments of the surgeon of World War II". Churchill reviewed the advances made and the surgical conceptions clarified by the impact with war and concluded with an able discussion of the relationships between the medical services and the command staff. Apparently the Medical Department of the Army of the United States had its difficulties and frustrations. The true situation behind the picture of the nagging voice of the medical services importuning the deaf ear of the commander, who will not have his will imposed upon, is well expressed by Churchill: "Disease, not the Doctor, imposes its will on the Commander; man's physiologic capacities influence and limit operations. These are the decimating forces that can dictate policy to the Commander. It is both the concern and the responsibility of the Army Medical Department that this shall not happen."

It is not practicable to do more here than to indicate the scope of the surgical subjects discussed at the congress. The present position of the sulphonamides and antibiotics in surgery is assessed. A series of contributions deals in great detail with modern ideas on the care of the patient before and after operation; the wise and witty address by Owen H. Wangensteen on "The Surgeon and His Trust" is outstanding in this group. Recent advances in surgery of the cardio-vascular system and of the lungs are described. Modern methods of dealing with venous thrombosis are considered. Recent work on the nature and treatment of cancer is presented. Interesting contributions are made on bone and joint, eye, and ear, nose and throat surgery. Plastic surgery is discussed from many angles.

In short, there are approximately sixty papers presented dealing with most of the significant aspects of present-day surgery. Doubtless the majority of practising surgeons will see this number of *Surgery, Gynecology and Obstetrics* as a matter of course, but any medical practitioner will be rewarded by browsing through it. He will find much that is instructive, interesting and stimulating.

[1] *Surgery, Gynecology and Obstetrics*, April 15, 1947.

PERIPHERAL FACIAL NERVE PARALYSIS IN HIGH ARTERIAL BLOOD PRESSURE.

PARALYSIS of the peripheral facial nerve may be due to a number of causes such as cranial trauma, surgical operation on the mastoid, oto-mastoid inflammation, parotid tumour and syphilis, and, of course, there is the rather common "Bell's palsy" arising from chill. That a fair proportion of facial paralyses cannot be thus explained and that these are associated with high arterial blood pressure have been known for some time, but the exact causation has been variously postulated.[1] Amongst the hypotheses suggested are infection from a diseased kidney, pressure on the nerve by a sclerosed artery, endocranial high tension leading either to compression of the nerve or rendering it anæmic, arterial spasm in the affected area, and lastly hæmorrhage. Dr. Constancio Castells, director of the Neurological Clinic, Montevideo, Uruguay, has subjected this problem to a searching inquiry and has had the advantage of having many clinical cases to investigate.[2] The outcome of this interesting research is in Castell's opinion clearly established, namely, that in those cases in which facial paralysis is not obviously caused by trauma, metastatic infection and the like, it is due to hæmorrhage in the petrosal canal (facial canal, aqueduct of Fallopius). The leading features in the clinical picture he gives as follows: rapid onset, intense unilateral headache generally preceding the attack, hæmorrhages detectable in other regions of the body, the inability to find any other possible cause and very commonly absence of hemiageusia. He finds more cases amongst women than amongst men. The prognosis he declares to be bad; relapses occur in some cases and in most patients there is permanent facial deformity. The electrical reactions of the affected facial muscles have been investigated. Castells is so convinced that high arterial blood pressure is the dominant cause of this condition that he advises measurement of the arterial pressure to be undertaken in all cases of facial paralysis.

[1] See in particular "The Occurrence of Peripheral Facial Paralysis in Hypertensive Vascular Disease", by H. R. Merwarth, *Annals of Internal Medicine*, Volume XVII, 1942, page 298.

[2] *Anales de la Facultad de Medicina de Montevideo*, Volume XXXI, 1946, page 877.

Abstracts from Medical Literature.

OPHTHALMOLOGY.

The Production of a Filtering Cicatrix in Glaucoma.

RICHARD CRUISE (*British Journal of Ophthalmology*, February, 1947) was fortunate to secure for histological examination an eye on which he had performed a hinged flap sclerotomy twelve years previously. Examination of this eye provided proof that an endothelial lining to the filtering scar is formed, and because of this proof he recommends this operation as being the one of choice in cases of chronic glaucoma. The technique advocated is as follows: a flap of conjunctival and subconjunctival tissue is dissected down to the limbus, the cornea being split for half a millimetre, and a special hook is then inserted into the corneo-sclera just above the limbus. The anterior chamber is entered by dissecting through the sclera one and a half millimetres from the limbus; with a pair of sharp-pointed scissors two lateral cuts of two millimetres are made, one at each end of the incision, and sloped towards each other to make a blunt-angled hinge with apex towards the cornea. The conjunctiva is replaced but not sutured.

Corneal Lesions in Hodgkin's Disease.

P. MATTEUCCI (*American Journal of Ophthalmology*, February, 1947) describes a case of Hodgkin's disease in a female, aged twenty-seven years, in whom there was marked corneal involvement of both eyes. She complained of photophobia, lachrymation and diminished vision. In general the keratitis had a herpetiform appearance and there was marked hypæsthesia. An attempt at inoculation onto a rabbit's cornea failed. The corneal lesion failed to respond to the usual treatment, but responded after a series of X-ray treatments to the lymph glands. Ocular involvement in Hodgkin's disease is rare, though lesions have been reported in orbit, lachrymal gland, and eyelids, conjunctiva, fundus and cornea.

Goniotomy for Congenital Glaucoma.

OTTO BARKAN (*The Journal of the American Medical Association*, February 22, 1947) presents his observations and conclusions on 51 children and infants with infantile or congenital glaucoma. The early signs are often of a congestive and irritative nature. The congestive symptoms which are caused by increased pressure consist of corneal cloudiness, hyperæmia of the bulbar conjunctiva, photophobia, epiphora and blepharospasm. In every case in infants in which irritative phenomena or corneal cloudiness is present, even though the bulbus does not appear enlarged, glaucoma must be suspected and intraocular pressure tested with a tonometer. The tension should always be measured with the patient under ether anæsthesia which must be deep at the moment of measurement. In the series under review the primary cause of reduced vision in most cases was a disturbance of the cornea. This begins with corneal cloudiness and appears to coincide with the onset of increased intraocular pressure. If allowed to persist it is followed by permanent scarring of the cornea with associated irregular astigmatism and ensuing amblyopia of greater or less degree. Patients in whom the corneal cloudiness was relieved within a few days after its onset regained acute vision. The effects of hypertension are corneal cloudiness, permanent scarring, amblyopia and glaucomatous cupping of the optic nerve. Tears in Descemet's membrane were not seen in the series of cases reviewed. The author considers that they appear only when pronounced distension and degenerative changes have taken place. Of 76 eyes operated on by goniotomy, 66 obtained a successful result, the criterion of success being a tension of not more than 21 millimetres (Schiötz) three months after operation, no miotics having been used during the two weeks preceding measurement of the pressure.

Contact Lenses.

A. G. CROSS (*The Practitioner*, May, 1947) discusses the advantages and indications for the use of contact lenses. With them corneal astigmatism is neutralized, distortion of image is abolished, and prismatic effects which occur with high-powered spectacles are lost. They do not decrease the effective field of vision and they may enable binocular vision to be achieved in monocular aphakia. They are invisible, do not steam in moist atmosphere and do not cause trouble in wet weather. Their use is indicated in asymmetrical ametropia, conical cornea, surface irregularities of the cornea following injury or inflammation, and delayed keratitis due to the effects of mustard gas. High myopia may be considerably relieved with contact lenses. In addition aniridia and albinism are mentioned as fields of use. They have limited use therapeutically as in neuroparalytic keratitis and for purely cosmetic reasons as in actors and singers. Tolerance to contact lenses varies greatly in different patients. In many people removal of the lens becomes necessary because of the development of Sattler's veil—a mistiness due to œdema of the corneal epithelium. Most people can wear contact lenses for an average of four hours per day. The author concludes that the day is far off when contact lenses can entirely replace ordinary spectacles.

Esotropia following Occlusion.

KENNETH C. SWAN (*Archives of Ophthalmology*, April, 1947) found four cases of esotropia following occlusion in 1,000 cases of esotropia reviewed. He describes the four cases and points out that in three a suit for malpractice was threatened. In one case the left eye of a boy, aged nine years, was occluded because of an infection of the upper lid, and after two weeks of occlusion the right eye was convergent and the child had diplopia. The visual acuity was $^{20}/_{30}$ in the right eye and $^{20}/_{20}$ in the left eye and there was an error of +4·0 diopters and +2·0 diopters respectively. The correction was ordered and orthoptics commenced, and after two weeks the right medial rectus muscle was recessed. The second case was in a child, aged twelve years, who had had periodic esotropia; this had been corrected with glasses at three years of age. At eleven years of age the visual acuity was $^{20}/_{100}$ in the right eye and $^{20}/_{30}$ in the left, and the error was +4·0 diopters in each eye. There was no manifest deviation, but the cover test revealed 5·0 to 7·0 prism diopters of esophoria for distant fixation. The left eye was occluded for six weeks, at the end of which time the child had diplopia and convergence of the right eye. The right esotropia was 15 degrees for distant and 25 to 40 degrees for near fixation. The child was given orthoptics for two weeks, when recession of the right medial rectus was performed and this was followed by further orthoptics. Two months after operation the visual acuity in the amblyopic eye had improved to $^{20}/_{30}$ and the child was able to "bar 'read" and had comfortable single binocular vision. Two other cases are described. Swan concludes that a latent convergent tendency seems to be the condition underlying development of esotropia from occlusion, and therefore, in the presence of esophoria or uncorrected hyperopia, prolonged monocular occlusion for diagnostic or therapeutic purposes should be used with caution. In treatment of unilateral amblyopia in patients having single binocular vision, lacquering the spectacle lens to reduce visual acuity in the better eye is suggested as safer than total occlusion because binocular vision is maintained.

Contact Lenses in Excelsis.

ALLAN H. BRIGGS (*The British Journal of Ophthalmology*, May, 1947) reports the history of a man, aged twenty-two years, who was myopic and anxious to join the Royal Air Force. His visual acuity in the right eye was $^{6}/_{6}$ with −8·0 diopter sphere and −1·0 diopter cylinder on an axis of 170°. In the left eye it was $^{6}/_{5}$ with −4·0 diopter sphere and −2·0 diopter cylinder on an axis of 170°. He had been successfully fitted with contact lenses and was accepted as fit for service with the Royal Air Force; the presence of the lenses was not suspected. He was posted to Canada and America for training as a pilot and later was a captain of Halifaxes bombing Germany. He was shot down and parachuted into France, joined the Resistance Movement, and then made his way to Spain and eventually back to London. Later he did duty in India, North Africa and Australia. He wears his lenses up to eighteen hours per day, and on two occasions wore them for periods of thirty and thirty-six hours. At the many examinations which he had in the Royal Air Force the lenses were never detected and he was always classified as A1. He is married and his wife does not know that he wears contact lenses.

Eyestrain.

STEWART DUKE-ELDER (*The Practitioner*, May, 1947) defines eyestrain as the striving of the visual apparatus to clarify vision by ineffectual adjustments. He points out that biologically the eyes were adapted for relatively simple purposes—to look for enemies and food—and they have not necessarily evolved sufficiently to fulfil the exorbitant demands of unremitting close work imposed upon them by a complex and artificial civilization. The factors in work causing eyestrain are faulty illumination and fineness of work. Eyestrain is solely the result of muscular work done in the endeavour to produce clear images on the macula of each eye. In cases of high refractive errors, paralysis of accommodation or squint, the person reconciles himself to the

disability of inadequate sight, and the question of eyestrain rarely arises. It is therefore the small error of refraction, the weakness of accommodation, the insufficiency of convergence or the latent squint with which it is essential to deal. Duke-Elder lists the common ocular defects causing eyestrain as follows: presbyopia, refractive errors, accommodation and convergence upset, muscular unbalance and aniseikonia. The ocular symptoms experienced are temporary blurring of vision, eyes hot and "gritty" and eventually a dull ache. Reflex symptoms are headache—temporal, frontal or vertical, but frequently occipital or even down the neck. The symptoms occur mainly in states of debility, in convalescence from illness, or in pregnancy, and they occur when other stresses and strains are greatest. Finally, such symptoms are sometimes morbidly aggravated in neurasthenia or states of anxiety neurosis. The treatment should not be confined to an optical examination, but the general health, habits and anxieties should be investigated and treated.

OTO-RHINO-LARYNGOLOGY.

Effect of Penicillin Lozenges.

D. TAYLOR, W. E. CULVER AND W. J. NUNGESTER (*Annals of Otology, Rhinology and Laryngology*, December, 1946) state that in a group of 26 patients, including eleven undergoing tonsillectomy, five undergoing tooth extractions, six with miscellaneous conditions of the mouth and throat and four normal controls, bacteriological examinations were made before, during and after a period of therapy with penicillin lozenges. In a second larger group suffering from acute pharyngitis and tonsillitis, clinical observations alone were made. Each lozenge contained 500 Oxford units in a lactose base. The patients were instructed to keep a lozenge in the mouth almost continuously during waking hours. With care each lozenge could be made to last up to one and a half hours. The majority used eight to twelve lozenges (4,000 to 6,000 units of penicillin) daily. Patients using lozenges after tonsillectomy and after dental extraction appeared to have less membrane in the fossæ and to experience less pain. Several subjects of acute tonsillitis and of established severe pharyngitis were treated with no apparent benefit. Penicillin lozenges appeared to be of definite benefit in early cases of pharyngitis. Four patients with Vincent's angina were treated with definite symptomatic relief in all. Throat washings were made before, during and after treatment in the 26 cases specially selected for study. It was deemed desirable to present only data pertaining to total bacteriological counts, and to *Streptococcus viridans* counts. The therapy had no effect on the total count in some cases, but in others it caused a very marked decrease. *Streptococcus viridans* was practically eliminated in 14 of the 26 cases. In three there was no change in the *Streptococcus viridans* flora, and in these cases the organism was penicillin resistant. The penicillin content was found to be nil in 108 samples, and varied from 0·6 unit to 5·0 units in the other eleven. The assay technique probably was not sensitive enough to detect minute amounts of penicillin which may be therapeutically significant. It was noted that penicillin could not be detected as persisting in the mouth ten minutes after the disappearance of the lozenge.

Sarcoma of the Larynx.

LOUIS H. CLERF (*Archives of Otolaryngology*, November, 1946) states that sarcoma of the larynx is uncommon. Hospital statistics reveal a ratio of one sarcoma to 90 or 100 carcinomata. Sarcoma is a disease of adult life and is commoner in men. In eight cases which constitute the basis of this report all the patients were men. The commonest form is fibrosarcoma, and this usually involves the vocal cords and epiglottis. The tumour is single, often pedunculated, and sometimes more or less nodular, firm in consistency, rarely ulcerated and relatively avascular. The visible portion of the tumour may be large, but the point of attachment may be small so that it may readily be removed without sacrifice of the larynx. Growth is slow and metastasis often delayed. A local recurrence may grow more rapidly than the primary tumour. Four of the series of eight newgrowths were fibrosarcomata, all attached to a vocal cord, two being pedunculated. Of the remaining four there was one each of fibro-osteosarcoma, chondrosarcoma, lymphosarcoma, and extramedullary plasmocytoma. Hoarseness and dyspnœa in varying degree are the common symptoms. Dyspnœa may be intermittent in pedunculated tumours, and may at times become alarming. Diagnosis is often not easy. Absence of ulceration suggests a benign tumour. Biopsy is often not satisfactory as the overlying mucosa may be normal. Thyreotomy is especially useful in the treatment of sarcoma of the larynx. Laryngectomy was necessary for the patients with chondrosarcoma and fibro-osteosarcoma in the present series. Lymphosarcoma usually responds favourably to irradiation and this was used successfully for one of the author's patients. One discrete cordal tumour could be removed with a portion of arytenoid and another with a segment of the vocal cord by the use of a snare and cupped forceps respectively. Of six patients observed for more than five years, one died from sarcoma which recurred locally and metastasized in the lungs. No recurrence has been observed in any of the others.

New Treatment for Hearing Disorders.

H. HIRSCHFELD, M. JACOBSON AND A. JELLINEK (*Archives of Otolaryngology*, December, 1946) report the treatment of hearing disorders by the administration of a combination of amino acids and vitamins. It has been reported by several writers that vitamins in combination with protein and amino acids catalyze many body reactions, play an important role in many enzymes containing vitamins and facilitate many metabolic transformations as coenzymes, Ampoules, each of two millilitres, containing thiamin, riboflavine, pyridoxine, nicotinamide, choline, glutamic acid, histidine, methionine and urea were used for intramuscular injections three times a week and then twice a week. This therapy was supplemented by daily oral administration of three capsules each containing vitamins and a wide variety of amino acids—vitamin *A*, thiamin, riboflavin, pyridoxine, ascorbic acid, nicotinamide calcium pantothenate, cysteine, urea, thyrosine, choline, glutamic acid, liver concentrate and dried yeast. The combination of capsules and injections was found better than parenteral treatment alone. A beneficial effect was noticed on the hearing of a patient under treatment with the new compound for gastro-intestinal disturbances, and subsequently 78 patients were treated for hearing disorders, with improvement of hearing in 57 of these. In many cases there was an immediate increase in hearing acuity in from fifteen to thirty minutes after the injection. The full effect was usually reached within two to four weeks. Continuous treatments over two or three months or more did not seem to present any additional advantages. Increase in acoustic perception was noticed in the middle octaves, but the most important gains appeared to be in the high-pitched tones, suggesting a functional improvement of the nerve. Some patients showed noticeable gains in one ear only; this tended to preclude a purely psychological effect. In one case of *diplacusis binauralis dysharmonica* the divergence of the notes heard was gradually reduced. The gains in hearing were in some cases impressive—up to 40% or 50%.

Fenestration Operation.

KENNETH M. DAY (*Archives of Otolaryngology*, November, 1946) discusses a series of 100 patients on whom he has performed the fenestration operation. The operation is of greatest value in young adults and becomes of less and less value after the fourth decade of life. Operation is indicated when hearing loss has reached a level below the practical level for normal speech. The bone conduction loss should be slight, especially about the level of 2,000 cycles. The percentage of successful results from the original operation, when the fenestra was made far back in the horizontal canal, was found to be low. The more anteriorly placed opening into the ampullary end of the external canal and adjacent vestibule is a distinct improvement. This opening can be covered by a relatively thin portion of the lining of the external canal. That Shrapnell's membrane can be caused to cover the fenestra is an anatomical impossibility. The author has not attempted to use the cartilaginous stopple as advocated by Lempert. Satisfactorily improved hearing is claimed for 80 of the 100 patients operated on. Closure of the fistula has been observed less often in the latter half of the series of cases. Revision of the fistula was carried out in six cases, three of these resulting in the restoration of practical hearing. There have been no serious complications in any of the series, no facial weaknesses, operative infections or dead labyrinths. Post-operative infections are frequent, but respond readily to the same type of conservative treatment as is commonly used after radical mastoidectomy. Patients with nervous instability should not be operated upon, as the psychological storm associated with expectation, recovery of hearing or failure may be terrific. The operation has proved to be relatively free from serious risk. It is a gamble at best and one cannot predict when an operation will prove to be a failure. While still far from perfection, the results seem to show a definite trend to a higher percentage of successes.

British Medical Association News.

SCIENTIFIC.

A MEETING of the South Australian Branch of the British Medical Association was held on April 24, 1947, in the Verco Theatre, Institute of Medical and Veterinary Science, Adelaide, the President, DR. L. R. MALLEN, in the chair.

Treatment of Varicose Veins.

DR. O. M. MOULDEN read a paper entitled "Treatment of Varicose Veins by High Ligation, Section and Injection: An Investigation" (see page 234).

DR. A. F. HOBBS, in opening the discussion, said that in the investigation of a patient with varicose veins it was important first to ask oneself if the varicose veins were causing the symptoms complained of, and if the symptoms would be relieved by treatment of the veins. Very large veins were often present without symptoms. It must be decided in each such case whether treatment was justified with a view to preventing the subsequent development of symptoms. Pain from such conditions as arthritis and impaired arterial circulation must be excluded. A decision with reference to what operations and injections were required should be made at the preliminary examination, but might be modified by the results of the ligation and injection. With regard to tests, the only ones usually employed by the speaker were the Trendelenburg test with the tourniquet applied at the upper part of the thigh, and the same test applied with the tourniquet at successively lower levels to determine the site of the lowest communicating vein with incompetent valves. Tests for the adequacy of the deep venous circulation were unnecessary, since, if there were well-marked varicosities with œdema in a patient getting about, it could be assumed that the deep veins were functioning adequately. It was important to mark out the veins above and below the knee when secondary ligation was to be performed, but not for "high ligation" as the femoral artery provided an adequate landmark. Treatment generally resolved itself into high ligation and injection, secondary ligation in about 50% of cases, and occasionally "follow up" injections when prominent veins persisted.

Dr. Hobbs was strongly of the opinion that local anæsthesia should be used in all cases. He felt that a much smaller incision than that shown in the film should be used, and that disturbance of the tissues should be reduced to a minimum by accurate placing of the incision in relation to the pulsations of the femoral artery. He had encountered one case in which the upper three tributaries, which usually entered the internal saphenous vein, had all entered the common femoral trunk, and one case in which the main trunk of the internal saphenous vein became continuous with what appeared to be a large superficial external iliac vein, there being no large vein entering the common femoral trunk.

Dr. Hobbs was not in favour of using the large quantities of "Ethamolin" advocated by Dr. Moulden, as he considered that there was an increased risk of the thrombosis extending far enough into the deep veins to give rise to embolism. He used eight millilitres in conjunction with the high ligation and six millilitres with the secondary ligation below the knee. It was noteworthy that there was no constant relation between the size of the veins and the extent of the reaction from a given amount of "Ethamolin" injected. Often eight millilitres produced a severe reaction when injected into the saphenous vein in a patient with very extensive veins on that side, whereas the subsequent injection of the same quantity on the other side, where the veins were much smaller, produced only a very slight reaction. This was probably explained by the fact that the blood flow in the veins on the latter side was faster.

When a "blow back" occurred (distension of the vein proximal to a competent valve) Dr. Hobbs performed immediately a second ligation and injection of a previously marked prominent vein above or below the knee. Harold Dodd had advocated attempting to pass a ureteric catheter past the valve and making the injection through it.

Although "Ethamolin" was much less irritating to the tissues than many previously used solutions, its perivenous injection could cause sloughing of the skin. This accident could be avoided by adequate exposure of the segment of vein to be injected and cutting the vein across to expose its lumen clearly. Reasons for recurrence were, firstly, ligation in continuity followed by recanalization, and, secondly, ligation below the point of entrance of the main tributaries. This was more important than failure to ligate the tributaries themselves.

When secondary ligation was performed below the knee it was noticeable that thrombosis tended to extend upwards through collateral channels into any remaining varices in the thigh, as well as downwards, so that it was not essential for the second ligation to be at the extreme upper limit of the remaining varices.

Before diagnosing the presence of dilated external saphenous radicles one should remember that varices on the posterior aspect of the leg were often secondary to a varicose internal saphenous trunk which was connected with them by large communicating branches round the medial side of the leg.

DR. D. R. WALLMAN inquired if either of the speakers had encountered any cases of lymphorrhœa following the operation. In one of his early cases some ten or twelve years previously, using four millilitres of quinine and urethane solution as the injection, he found that the patient when seen two days after operation had developed a swelling the size of a cricket ball under the wound. This had come up gradually and with very little discomfort. Thinking it was a hæmatoma, he had released the stitches, allowing the escape of several ounces of pale straw-coloured fluid. This fluid continued to drain very freely for two or three weeks, soaking large dressings several times a day. There was very little if any inflammatory reaction about the wound and a quite normal reaction along the saphenous vein. The sinus finally closed after being treated with pure phenol and the ultimate result was good.

DR. S. KRANTZ stated that he had to admit to having cut and ligated quite a number of internal saphenous veins and also, at the same time, a communicating vein with an inefficient valve, if present—and using no sclerosing fluid at all! However, the results had been very good and usually the associated varicose ulcer had been healed within three to six weeks with the aid of "Viscopaste" and "Elastoplast" bandages. The discomfort to the patient when no sclerosing fluid was used was minimal and the time lost from the economic point of view was very short. No doubt Dr. Moulden would tell him that they would all recur. However, he was "waiting and seeing".

DR. A. BRITTEN JONES mentioned the necessity of making a correct diagnosis in these cases, and stressed the importance of carefully examining the peripheral arteries. He had recently seen in consultation two patients who had been referred for treatment of their varicosities which were thought to be the cause of pain involving the calves and feet. Further interrogation, however, revealed that their pain was of the nature of an intermittent claudication, and examination of their tibial arteries showed absence of pulsation. Both patients were examples of Buerger's disease.

Dr. Britten Jones went on to say that while pulmonary embolism had not been mentioned as a complication of the operation of high ligation, it nevertheless does occur, though admittedly it was very rare. He had recently heard of a young woman, aged twenty-eight years, who died of a massive pulmonary embolism a few days after bilateral ligation and injection of varicose veins. A second example occurred in one of his own cases; fortunately it was not fatal. The embolism occurred despite early ambulation in a female, aged sixty years, who had ten millilitres of sclerosing fluid injected into the veins of the left leg in association with high ligation. Dr. Britten Jones thought that the thrombosis responsible for the embolism occurred in the deep set of veins in the calf and foot and raised the question whether, with the injection of large amounts of sclerosing fluid, it would possibly overflow into the deep venous channels through incompetent intercommunicating veins and cause thrombosis in the deep set. He had not used the large amounts of sclerosing fluid advocated by Dr. Moulden for this reason. He concluded by congratulating Dr. Moulden on his excellent paper.

DR. IAN HAMILTON stated that he had seen a large number of varicose veins treated by the operation of high ligation and injection. He felt that either a general anæsthetic or a local anæsthetic was suitable for the operation, but that for the obese or nervous patient a general anæsthetic was much better, giving more comfort to the patient and to the surgeon. He believed that there was little added risk in the use of a general anæsthetic. He had himself used such on a number of patients for this operation without ill effect. The usual routine was to get the patient up onto a commode after recovery from the anæsthetic for comfort in urination, and the next day and thereafter to get the patient to walk around the bed several times.

Dr. Hamilton considered that a horizontal incision in the natural fold of the groin gave the best approach and that a large quantity of "Ethamolin Oleate" should be injected.

His usual routine was to inject twelve millilitres into the *saphena magna* vein from the upper end, massaging it a little to distribute it throughout the venous tree. The reaction varied in different cases, but he aspired to obtain a brisk reaction along the veins right down to the calf, as this gave the best result. If this was not obtained subsequent injections would probably be needed.

Dr. Hamilton could not agree with Dr. Moulden that perfection in the treatment of varicose veins had yet been obtained as he had seen a number of cases of the condition in the out-patient department which had been treated by high ligation and injection, properly performed, and had subsequently relapsed after a year or two. Some of these patients he was sure had been treated by Dr. Moulden himself. However, it was his belief that high ligation with massive injection given at the time of the operation was the best treatment available for the severe type of varicose veins, and that, although in all cases the condition did not respond and all patients were not permanently cured, the results on the whole were very pleasing, and in the great majority of cases the treatment gave tremendous relief.

NOTICE.

THE following letter, received by the President of the Western Australian Branch of the British Medical Association from the Commissioner of Police for Western Australia, is published at the request of the executive committee of the Branch.

POLICE DEPARTMENT.
Office of the Commissioner,
Perth, W.A.,
1st August, 1947.

Dear Sir,

With reference to my recent telephone conversation with you concerning a child missing from Safety Bay some time ago, I wish to advise you as follows:

On the 13th February last, Peter Graeme Butler, aged 18 months, mysteriously disappeared from the hostel at Point Peron, where his parents were holidaying.

Search parties were organized by the police, and a thorough search of the surrounding bush country was made, extending over a period of ten days, without any trace being found of the child; and it was concluded that he must have entered the sea, unnoticed by anyone, and been drowned.

The mother of the child, whilst recognizing the possibility of this having occurred, is of the opinion that he may have been kidnapped, and she has appealed to the department, both personally and by letter, to do everything possible to investigate, throughout the Commonwealth, the disappearance from that angle.

In this direction I arranged for the matter to be published in the *Police Gazette*, which is circulated to the police in all States.

Mrs. Butler has now requested that the assistance of the B.M.A. be solicited, and in this connection I quote the following extracts from recent letters received from her:

> "He had an abnormality which should prove helpful in identifying him, which was an abnormally small penis. Doctors have told me that it would develop as he grew older, or he would need to have injections to make it develop. My sister-in-law, a trained nurse, tells me it is a very rare trouble and she has never seen anything like it in her nursing experience. If he has been kidnapped he may eventually be taken to a doctor for treatment, and if they all have particulars of his age, photo, etc., we may find him some day. My suggestion is that, if possible, you ask the B.M.A. to publish photos of Peter in their medical journal and request them to give you all particulars of any child brought to any doctor in Australia needing treatment for that complaint."

If it is possible for your Association to do anything to meet the wishes of Mrs. Butler, it would be very much appreciated by her, and she will then feel satisfied that she has at least done everything possible in the matter.

In this connection, the following description of the child is forwarded for your information:

Age: 18 months.
Weight: 28 lb.—solidly built.
Very fair; blue-grey eyes.
All teeth, excepting the eye teeth.

In anticipation of your Association agreeing to this matter being published in THE MEDICAL JOURNAL OF AUSTRALIA, a photo block of the child is forwarded herewith.

Yours faithfully,
(Signed) J. DOYLE,
Commissioner of Police.

The President,
British Medical Association,
Shell House,
St. George's Terrace,
Perth.

THE Federal Council of the British Medical Association in Australia is advised by the Department of Social Services that the following fees are payable to medical practitioners for completion of Form S.R. 4(3*a*, 3*b*), Rehabilitation Case Record.

1. For general practitioners a fee of 10s. 6d. will be paid for completion of Part 3*a* of the Case Record, *plus* a fee of 10s. 6d. for medical examination and investigation.
2. For specialists, the fee of 10s. 6d. will be paid for completion of Part 3*a*, *plus* the standard fee for specialist examination and investigation.
3. When Part 3*b* is completed by either general practitioner or specialist, an additional fee of 10s. 6d. will be paid.

Post-Graduate Work.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF ADELAIDE.

APPROACHING LECTURES AND COURSES.

THE Post-Graduate Committee in Medicine in the University of Adelaide announces the following lectures and courses.

Edward Stirling Lectures.

The Edward Stirling Lectures will be delivered by Dr. F. M. Burnet, F.R.S., in the Verco Lecture Theatre on Tuesday and Thursday, August 26 and 28, at 8.30 p.m. Admission will be by ticket, which may be obtained for £1 1s. from the University of Adelaide, the South Australian Branch of the British Medical Association, the offices of Calvary, Memorial, Wakefield Street and Ru Rua Hospitals, or the Medical Secretary of the Post-Graduate Committee. Dr. Burnet's subjects will be (i) "The Basis of Allergic Disease", and (ii) "The Natural History of Tuberculosis".

Refresher Week.

The refresher week course is primarily suitable for general practitioners, and will be held from August 25 to 29 in the Verco Lecture Theatre. Details have already been circulated, but may be obtained from the Medical Secretary of the Post-Graduate Committee.

Week-End Course in Surgery.

A week-end course in surgery will be held on August 30 and 31. The subject to be discussed will be "Fractures of the Lower Extremity". This is a revision course for general practitioners.

Course Suitable for Higher Degree in Gynæcology and Obstetrics.

A three months' part-time course will begin on Wednesday, September 3. The course consists of two lectures on both Wednesday and Friday afternoons, including sixteen lectures in pathology, eight in bacteriology, seven in gynæcology, four in obstetrics, six in neonatal diseases, three in medicine and one in radiotherapy. The fee for this course is 25 guineas. A detailed syllabus may be obtained from the Medical Secretary of the Post-Graduate Committee.

Course in Applied Surgical Anatomy.

A series of twelve lectures and demonstrations will be given by Dr. J. R. Barbour in the Anatomy School on Thursday afternoons at 4.30 p.m., commencing on September 4. The subjects which will be dealt with are as follows: appendicitis, hernia, uterus and supports, biliary tract and portal system, shoulder joint, brachial plexus, hand and wrist, knee joint, venous system of leg, sciatic nerve, heart, ear and tonsil.

The fee for this course will be £3 3s. Applications, accompanied by cheques payable to the University of Adelaide, should be made to the Medical Secretary of the Post-Graduate Committee. This course deals with the surgical anatomy of the common conditions met with in general surgical practice.

Course Suitable for Primary Examination for Higher Degree in Gynæcology and Obstetrics.

A series of 20 lectures in anatomy and 12 in physiology will be given on Tuesday, Wednesday and Friday afternoons at 4.30 p.m. in the anatomy and physiology departments respectively, commencing on September 3. The detailed syllabus may be obtained from the Medical Secretary of the Post-Graduate Committee.

Post-Mortem Demonstrations.

A demonstration of post-mortem material from the Royal Adelaide Hospital is carried out every Wednesday afternoon at 3.30 p.m. in the Institute of Medical and Veterinary Science. Medical practitioners are invited to attend one such demonstration before enrolling for a course. The course is also suitable for candidates for all types of higher degrees.

Courses Suitable for Higher Degree in Surgery.

Candidates for the M.S. Part II or F.R.A.C.S. are advised that some of the lectures advertised above will cover work that they should know. These are as follows: (i) the course in applied surgical anatomy; (ii) pathology as taught for higher degrees in gynæcology and obstetrics; it is hoped to continue this course next year for other sections of surgical pathology; (iii) bacteriology as taught for higher degrees in gynæcology and obstetrics; this is equally applicable for M.S. Part II and F.R.A.C.S. In addition it is proposed to organize the following: (iv) a ward round once a week, at which selected cases will be demonstrated; (v) lectures on advanced surgical subjects; these will also be delivered in the late afternoon once a week. Whether (iv) and (v) are instituted will depend on the number of medical practitioners who wish to attend either section regularly. Anyone interested is asked to notify the Medical Secretary of the Post-Graduate Committee.

Overseas Lecturers for 1947: Preliminary Notices.

1. Dr. Chandler Brooks, Professor of Physiology at the Johns Hopkins Hospital and Australian Post-Graduate Lecturer for 1947, will deliver three lectures on the following subjects: (i) "Obesity and Appetite" (October 6); (ii) "Control of Water Balance" (October 9); (iii) "Control of Reproductive Function" (October 10). These will be delivered at 8.30 p.m. in the Verco Lecture Theatre to the medical profession and to science graduates. The fee will be £1 1s. for the course.

2. Professor R. W. Gerard, Professor of Physiology at the University of Chicago, will be in Adelaide in September. Professor Gerard is a world authority on the activity of nerves and synaptic transmission. While in Adelaide he will deliver two lectures to the medical profession and two to a public audience. The details of the professional lectures have not yet been fixed. Dr. Gerard's visit is sponsored by the National University, Canberra, and members of the medical profession will be invited to attend his lectures free of charge. Further details will subsequently be made available.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

PROGRAMME FOR THE REMAINDER OF 1947 AND FOR 1948.

THE Post-Graduate Committee in Medicine in the University of Sydney announces the following programme for the remainder of 1947 and for 1948.

Courses.

On September 1 the following courses will begin and will continue for ten weeks: Part I, degree of master of surgery, and Part I, diplomas in gynæcology and obstetrics, laryngology and otorhinology, and ophthalmology. Attention is drawn to a recent decision by the Faculty of Medicine of the University of Sydney to hold examinations for these degrees and diplomas once only each year. The next examinations will now take place in April, 1948, and those for Part II will be conducted in May. This applies also to the diplomas in dermatology, clinical pathology, psychological medicine, diagnostic radiology and therapeutic radiology.

Annual General Course.

Dr. C. B. Heald, C.B.E., F.R.C.P., the well-known authority on rheumatic diseases, will give a lecture on "Arthritis and Ex-Service Personnel" on Wednesday, August 27, at 4.15 p.m., in the Stawell Hall, 145, Macquarie Street, Sydney. Dr. Heald will give an account of the work of the British Legion Unit of Rheumatology, and his lecture will be illustrated by examples of the films taken during the progress of the work.

Dr. Chandler Brooks, Associate Professor of Physiology at the Johns Hopkins Hospital, will be visiting Australia in September at the invitation of the Australian Federation of Post-Graduate Committees in Medicine, and will lecture in all Australian States. Dr. Brooks's lectures in Sydney will be as follows: (i) Monday, September 22, at 8 p.m., "The Control of Reproductive Function"; (ii) Wednesday, September 24, at 4.30 p.m., "Obesity"; and (iii) Friday, September 26, at 8 p.m., "The Control of Water Balance".

It is also announced that Professor R. W. Gerard, Professor of Physiology of the University of Chicago, has been invited to Australia by the Australian National University. The tentative dates of his lectures in Sydney are Tuesday, November 4, 1947 ("The Mechanism of Action of Nerves"), and Monday, November 17, 1947 ("The Present Notions of Synaptic Action"). Further details will be announced later.

The subscription to the annual general course is £1 1s. *per annum*, and information may be obtained on application to the Course Secretary.

Country Courses.

Week-end courses for the remainder of 1947 will be held as follows: Kempsey, September 13 and 14; Wollongong, September 20 and 21; Parramatta, October 18 and 19; Newcastle, October 25 and 26; Orange, November 8 and 9.

Tentative Programme for 1948.

On January 19, 1948, courses in advanced medicine, courses for Part II of the diplomas in gynæcology and obstetrics, laryngology and otorhinology, and ophthalmology, and a course for Part II of the degree of master of surgery, will begin and continue for twelve weeks.

In March it is likely that an intensive course for general practitioners of two weeks' duration will be held. Courses will begin for the diploma in psychological medicine, Part I, and for the diplomas in diagnostic radiology and therapeutic radiology.

A course for Part II of the diploma in psychological medicine will also begin in March.

During May a three months' course for general practitioners will be conducted.

In June a course for the diploma in anæsthesia will begin and continue for six months, together with courses in

advanced medicine (twelve weeks) and for Part I of the diploma in dermatology (three months).

In July a course for the diploma in clinical pathology will begin for six months.

During September a course for Part II of the diploma in dermatology is likely to begin and continue for six months, and courses for Part I of the degree of master of surgery and of the diplomas in gynæcology and obstetrics, laryngology and otorhinology, and ophthalmology, may begin, to continue for approximately ten weeks.

This programme is tentative only and further details will be announced later.

Correspondence.

THE FUTURE OF MEDICAL PRACTICE.

SIR: In the journal of July 6, 1946, there appeared an article entitled "National Health". In the ensuing year no comment on this subject, other than editorial, has been published in the journal. I therefore wish to draw the attention of your readers to the issue of July 19, 1947, where is printed the address given by Dr. D. Robb, of Auckland, on "The Future of Medical Practice". Herein the profession in Australia is given a specialist account of what has happened in New Zealand since the Government introduced, after two and a half years' planning, its *Social Security Act* of 1938.

The account makes sorry reading. Three years after the act was implemented only a handful of doctors were cooperating, although the scheme (capitation fee basis) was working well where given a trial, "particularly one-doctor areas". Forced by lack of professional cooperation, the Government then laid its "bad egg" in the form of an amendment to the act which provided for fee-for-service payments. To their and our shame most members of the profession have accepted this "bad egg" and have "rapidly become extraordinarily prosperous". The public is getting quantity instead of quality of service, and the "demoralization of the profession has proceeded steadily".

It is certain that the Australian Government will establish a national health service. It is equally certain that without the cooperation of the profession the scheme will cause the Australian public to suffer in similar manner to the New Zealand public. But while the British Medical Association in New Zealand may plead ignorance as an excuse for its failure to cooperate prior to 1940, the Federal Council in Australia will have no such excuse for any failure to cooperate in producing improved health services and standards. For, as Dr. Robb concludes: "The professional groups with their inside knowledge of what could be done, and the political section with its desire to serve the people and to implement such plans, should be united, and if so would be irresistible. The measure of the divergence of viewpoint between the two groups is the measure of our failure as an intelligent society."

Yours, etc.,

W. G. HEASLIP.

27, Park Road,
Kensington Park,
South Australia.
August 4, 1947.

SIR: Our profession and our association appear to have come starkly up against bare facts at last. The days of pleasant theorizing about how nice it would be to be left alone in peace, or about how we would improve the medical services of the country if it were left to us to do so, and so on, are now apparently definitely in the historic past. We must at last face the fact that the constituted authority of our country has decided to make those alterations in medical service which are in line with its general policy for the future shape of our society. "The medical order that our stalwarts defend", as Wendell Berge has said, "has already ceased to exist." The precise form which the new order will take is, however, not yet decided, and we have a weighty decision to make. We cannot stop the change. We must not dissociate ourselves from it. Our own welfare, the welfare of the young men now entering or who will in future enter our profession, and above all the welfare of the public who will depend on the integrity of the new service as they have in the past depended on the integrity of the medical profession, alike forbid us to stand aloof. We are the only body of citizens who know intimately the problems which will arise in the new service, and who can judge accurately of the dangers that will threaten its efficiency, and of the consequent perils to the public welfare.

Therefore it is our urgent duty, and that of our leaders, to formulate now a set of general principles which will go as far as we can at present see towards making the solution of those problems easier, towards avoiding as many of those dangers as may be possible. If those principles are neither selfish nor political in basis it is very unlikely that any government—for the Government after all is deeply concerned in making their new scheme a success—would ignore them. We must put our whole power and weight into seeing that they are not ignored. I can only set forth here a short illustrative list of some of such general principles, but I believe that these are very important.

First. *The service must not be built on departmental lines.*

Sir Raphael Cilento, himself at the time Director-General of the Department of Health in one of our States, gives the reason. "A hierarchy, of 'public service pyramid' form under-secretary to office boy, is the ideal instrument for policing regulations that prescribe or penalize the conduct of the individual citizen. Broadly, the more automatic the routine, the more effective the hierarchical system. Conversely, the more intimate, creative or individually variable the requirements, the less effective is the pyramid system, and the more heavily it must lean on the skilled technician or professional man. Ultimately, unless there is established a true co-ordination or parallelism of control, it fails to maintain public confidence."

Mr. D. Harcourt Kitchin, an English legal authority, discussing the same subject in 1943, said too: "A civil service department may be an adequate regulator of private enterprise, but it is a bad organ of positive administration. Its decisions can be made only by the men at the top, its finances are rigidly controlled by the Treasury, and it is subject to constant political attack. It is therefore inevitably slow, timid and unenterprising."

The Parliamentary Joint Committee on Social Security, in their Sixth Interim Report, discussing the general opposition to a departmental system of medical service, commented: "Freedom from political control is essential for the success of any such scheme."

The alternative to a departmental structure is the Public Corporation, Board or Commission, specifically appointed under its own charter, to do the work. It is, of course, ultimately responsible to the Minister and the Parliament, but it is not interfered with in its technical working. The medical profession should make this alternative a vital condition of its cooperation in the proposed new scheme.

Second. Under the general coordination and control of the Federal Health or Medical Commission, *the States must be the largest permitted unit of organization.*

To attempt to standardize all activities of medical service throughout Australia from Canberra would obviously be to sterilize the service and to paralyse initiative. The States must have sufficient autonomy to allow for variation in method and experiment in initiative; local pride in service; and comparison of results between one State and another. The same autonomy should be as far as possible spread downwards into the regions, districts and towns.

Third. *The service must have its own income on which it can rely; and be able to put unexpended income into reserve funds.*

Harcourth Kitchin, discussing a possible National Health Services Board for England, says:

"The Board should be entitled to an actuarially just proportion of the contributions to the general insurance fund [in our case I suppose of the Social Security Fund]—and that this proportion should not be subjected in lean times to the arbitrary raids by the Treasury which have so handicapped the B.B.C., or to the arbitrary reductions in allocated revenue which have so handicapped the Forestry Commission. It would thus not be dependent upon arbitrary allocations, or subject to continuing control by either the Treasury or any other department over the way it uses its revenue, still less over the day-to-day administration. . . . So long as it showed each year that it had made reasonable use of the funds entrusted to it, the Treasury should leave it alone."

And again, discussing one of the less fortunate of British experiments in public corporation administration, the Forestry Commission, he says: "Though the Commission is on paper an independent body, it is actually more like a small government department than a public board of the more modern kind. Its exercise of its executive powers is subject to Treasury direction, and the appointment and remuneration of its staff to Treasury control. Its accounts are State audited, and any surplus in the forestry fund is managed by the Treasury. . . . Its revenue fluctuates with variation in government policy."

It is vital to the success of the new service that this example should not be followed. We cannot, like the State Electricity Commission of Victoria, for instance, balance our accounts by selling our services to the public. But as the Social Security Tax will include a proportion taken from the population at large specifically for the purpose of paying for medical services, and that amount must be placed at the disposal of the governing body of those services, and not left in any way at the disposal of the Treasury, the sum must include capital, depreciation and running expenses as any other business would to cover the whole cost of the services, and must be the property of the service when raised. That again ought to be a vital condition of our cooperation in the Government's scheme.

Fourthly. *Promotion and appointment must be a local responsibility.*

Nothing would be more frustrating and sterilizing to a creative and intimate service such as medical practice must be than the dreary wait for, or the intriguing incidental to, promotion from a distant central authority such as a capital city. It is quite unnecessary that such an influence should be inherent in the new national medical service. Granted that young graduates may have to be directed at their entry into the service to certain places of work, that should be the limit of such direction. If Newcastle, Bathurst or Geelong should have a vacancy for a physician, a surgeon or a pathologist, they should be able to advertise that fact, and to select their appointees from among those who signify by applying for it, their desire to occupy the post. This is essential to the life and vigour of the new service, and will avoid one of the greatest and most dangerous influences tending towards deterioration of the personnel.

No doubt there are other principles equally vital which are as evident to the minds of those specially interested as these four are to me. The status of the medical schools and the teaching hospitals, for instance, might well be another.

But a list of such principles, limited strictly to those which are really vital to the efficiency of the service and the consequent welfare of the community, should be prepared at once, and published immediately as widely as the Press and radio can make them throughout the whole length and breadth of Australia. And it should be known that these are in our opinion so important to the social future of the country that we will not tolerate a service which does not incorporate them.

Yours, etc.,
ARTHUR E. BROWN.

Colac,
Victoria,
August 3, 1947.

THE TREATMENT OF EPILEPSY.

SIR: I notice that in "Current Comment" in the last issue of THE MEDICAL JOURNAL OF AUSTRALIA there is an article on the treatment of epilepsy with reference to "Tridione". The comment is made that "It is presumed that 'Tridione' will be available in this country before long". In view of this and a similar remark in the preceding issue of the journal, it may be of interest to your readers to know that "Tridione" has been in use at this hospital, and at the psychiatric clinic at the Royal Hobart Hospital since February of this year. Although the period of use is too short to offer any definite opinion as to its value, the results so far appear distinctly promising.

Yours, etc.,
ISABEL WILLIAMS, B.A., M.R.A.C.P.,
Medical Officer, Honorary Assistant Psychiatrist, Royal Hobart Hospital.

Lachlan Park Hospital,
New Norfolk,
Tasmania.
July 31, 1947.

SHADES OF SHIGA.

SIR: Can any of your readers give me recent news of Shiga, the Japanese scientist who discovered the dysentery bacillus in 1898?

Under the following circumstances in 1942 I met a medical lieutenant, Dr. Takuma, in the Japanese Army, who claimed to be his son-in-law. In June of that year one thousand Australian Imperial Force prisoners were enlarging the aerodrome at Tavoy, in Southern Burma. A medical section of the 2/4th Casualty Clearing Station under my command was caring for the sick in an old Burmese police barracks in the nearby village of Ledwedjung. Dysentery was rife and the plight of the patients was pitiable, for we were destitute of drugs, dressings, bedding or any of the ordinary amenities for keeping the patients clean. The rations, owing to the machinations of the quartermaster, Kyama, were even lower than the usual Japanese semi-starvation scale. To add to the desolation the earth latrines were foul and flooded by the incessant tropical rain.

I shall never forget the grey, ashen faces of the emaciated sufferers as they crawled to and from the latrines and tried wearily to climb back into the huts which were elevated on piles eight feet above the ground. Many, whose failing strength would not permit of this, lay on crude beds improvised from rice bags by the medical orderlies on the mud floors under the huts. Owing to the lack of bed pans and other receptacles, shallow trench latrines were dug alongside the beds. Several died in such primitive conditions.

During a lull in the weather, Dr. Takuma, whom I believed to be a mental specialist whose thesis had earned him recognition at the Imperial University of Tokyo (and, incidentally, promotion from the rank of medical sergeant-major), visited the camp. He sent for me and announced: "I have come to make new systems in your hospital."

He seemed friendly enough, so I assured him rather cynically that "new systems" were required urgently and suggested we start with the dysentery wards. The mention of dysentery caused him to tell me that he was a son-in-law of the august Shiga. In the dysentery lines, amid a number of curious onlookers, I indicated the wasted invalids lying under the huts.

"These men are dying, doctor. I fear your famous father-in-law would turn in his grave if he could see how his nation treats sick prisoners."

Takuma pondered this gravely and said: "It is impossible for him to turn in his grave." Surprised by the response, I asked: "Why not?" The obvious answer came: "Because he is not yet dead." He then told me that Shiga was aged seventy-three and in good health. When I asked Takuma to do something for the sick he said: "Yes, I will give you help. It is not fitting that soldiers should die thus in the presence of their comrades."

My hopes raised by visions of bedding, towels, soap, bedpans and invalid food, I said: "What supplies will you give me?" In all seriousness he replied: "I will give you some wood and some matting and nails so that your men can make screens to shield the dying from the gaze of their comrades."

Then the rain came on again, and I made a rapid readjustment of my ideas of Japanese medical standards.

From a humanitarian viewpoint Takuma's standards were deplorably low, but he did not know any better. He had enough moral courage to tackle his superior officer, Kyama, about the stolen rations, and they improved for at least a week. Also, he saved us from losing 250 of our 500 precious Red Cross dollars which the rascally Kyama was cheerfully embezzling under the pretext of changing them into Burmese currency. On another occasion he gave me a cigar.

If I can trace Dr. Takuma through his relationship to Shiga I should like to write and thank him.

Yours, etc.,
THOMAS HAMILTON.

Bank Chambers,
17, Bolton Street,
Newcastle,
New South Wales.
August 7, 1947.

SUPPLY OF ANTI-Rh SERUM.

SIR: Difficulties are arising in the Blood Transfusion Service of the Australian Red Cross Society in meeting the demands being made on this service for the supply of anti-Rh serum. Such demands can only be met if the obstetrical hospitals cooperate with the society.

It is requested that these hospitals, if possible, approach anti-Rh donors advising them of the deficiency of this serum and suggesting that they become members of this special donor panel.

Yours, etc.,
J. NEWMAN MORRIS,
Chairman.

Australian Red Cross Society,
National Headquarters Building,
122-128, Flinders Street,
Melbourne, Australia.
August 8, 1947.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette* of August 7, 1947.

NAVAL FORCES OF THE COMMONWEALTH.

Citizen Naval Forces of the Commonwealth.

Royal Australian Naval Volunteer Reserve.

To be Surgeon Lieutenant-Commander.—Samuel Edward Lees Stening, D.S.C., 6th December, 1945, seniority in rank 21st September, 1945.

To be Acting Surgeon Lieutenant-Commander.—James Stuart Guest, O.B.E., 5th November, 1946, seniority in rank 31st March, 1946 (seniority as Surgeon Lieutenant, 27th January, 1942).

To be Surgeon Lieutenant (D).—Darrell George Peachey, 16th August, 1946, seniority in rank 29th June, 1944.

ROYAL AUSTRALIAN AIR FORCE.

Citizen Air Force: Medical Branch.

The appointment of Flight Lieutenant F. E. Browne (256800), part time, is terminated, 30th June, 1947.

Reserve: Medical Branch.

The following ex-officers are appointed to commissions with the rank of Flight Lieutenant: Francis Esmond Browne (256800), Ian Donald Russell Gardiner (276408), 1st July, 1947.

Australian Medical Board Proceedings.

TASMANIA.

THE undermentioned have been registered, pursuant to the provisions of the *Medical Act*, 1918, of Tasmania, as duly qualified medical practitioners:

Wilson, William Wellesley, M.B., B.S., 1933 (Univ. Melbourne), M.R.C.O.G., 1936, F.R.C.S., 1937 (Edinburgh), Hobart.

Fisher, Anthony Graham, M.B., B.S., 1946 (Univ. Adelaide), Royal Hobart Hospital, Hobart.

Anderson, Donald Edmund, M.B., B.S., 1945 (Univ. Sydney), Royal Hobart Hospital, Hobart.

Murphy, Warren Ashton, M.B., B.S., 1946 (Univ. Sydney), Royal Hobart Hospital, Hobart.

Basser, Leon Solomon, M.B., B.S., 1946 (Univ. Sydney), Royal Hobart Hospital, Hobart.

White, Linus, M.B., 1946 (Univ. Sydney), Royal Hobart Hospital, Hobart.

VICTORIA.

THE following is a short summary of the proceedings of the Medical Board of Victoria at its meeting on July 14, 1947.

The Death of Dr. Basil Kilvington.

The President brought to the notice of the Board the death of Dr. Kilvington and it was resolved to place on record appreciation of the work done by him whilst a member of the Medical Board of Victoria.

Registrations.

The following persons were registered: Arthur Graham Brown, M.R.C.S. (Eng.), L.R.C.P. (Eng.), 1946; Alfred John Skinn, M.B., Ch.B. (Edin.), 1925; John Kenworthy Ogden, M.R.C.S. (Eng.), 1943, L.R.C.P. (Lond.), 1943, Dip.R.C.O.G., 1946; Donald Moody Sutherland, M.B., Ch.B. (Leeds), 1924; Alan John Gray, M.B., B.S. (Melb.), 1937; Rowland Eric Seal, M.B., B.S. (Melb.), 1947; Ann Hilda Willcocks, M.B., B.S. (Syd.), 1946.

Polish Reciprocity.

The question of recognition of Polish degrees granted at the University of Edinburgh was referred to the Crown Solicitor for an opinion whether these degrees should be accepted by the Medical Board of Victoria.

British India Reciprocity.

A number of inquiries were received from officers of the Indian Medical Service desiring to immigrate to Australia. The Board decided to accept for registration all persons who have completed a five years' course of medical and surgical study at any of the universities named in the first schedule of the *Indian Medical Act*.

Partnerships.

The Board approved of the dissolution of the partnership between Dr. G. D. McDonald and Dr. C. W. Rait, of Geelong.

The Board approved of a partnership agreement between Dr. H. W. Mitchell, Dr. A. H. MacGregor and Dr. D. F. Mitchell, of Morwell.

Obituary.

THOMAS JAMES WILLIAM KENNY.

WE regret to announce the death of Dr. Thomas James William Kenny, which occurred on August 14, 1947, at Melbourne.

CLIFFORD HENRY.

WE regret to announce the death of Dr. Clifford Henry, which occurred on August 16, 1947, at Sydney.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Engel, Charles, registered in accordance with the provisions of Section 17 (*b*) of the *Medical Practitioners Act*, 1938-1945, 22, Ocean Avenue, Edgecliff.

Walker, John Noel, M.B., B.S., 1943 (Univ. Sydney), 129, Mitchell Street, Stockton.

Lewis, Montague Bernard, provisional registration, 1947 (Univ. Sydney), St. George Hospital, Kogarah.

Van Dugteren, Noel Rothero, provisional registration, 1947 (Univ. Sydney), Manly District Hospital, Manly.

The undermentioned have been elected as members of the New South Wales Branch of the British Medical Association:

Adamson, John Richmond, M.B., B.S., 1943 (Univ. Sydney), 8, Duntroon Avenue, Roseville.

Allsop, John Leslie, M.B., B.S., 1946 (Univ. Sydney), 374, Princes Highway, Rockdale.

Brown, Douglas Scott, provisional registration, 1947 (Univ. Sydney), Royal North Shore Hospital, St. Leonards.

Callas, Constantine Peter, M.B., B.S., 1941 (Univ. Sydney), 362, Chapel Road, Bankstown.

Caradus, Verne, provisional registration, 1947 (Univ. Sydney), St. George District Hospital, Kogarah.

Clifton, Vivian Keith, provisional registration, 1947 (Univ. Sydney), 97, Springdale Road, Killara.

Creagh, Anthony, M.B., B.S., 1946 (Univ. Sydney), The Pah, River Road, Panania.

Crowe, Peter Harry, provisional registration, 1947 (Univ. Sydney), Sydney Hospital, Sydney.

Deithe, Lyle George, provisional registration, 1947 (Univ. Sydney), 5, Pembroke Flats, 15, New South Head Road, Vaucluse.

Hammond, Henry Grant, M.B., B.S., 1944 (Univ. Adelaide), c.o. Brady's Hotel, South Broken Hill.

Harrison, Graham Grantham, provisional registration, 1947 (Univ. Sydney), Royal North Shore Hospital, St. Leonards.

Jones, Alfred Kenneth, M.B., B.S., 1939 (Univ. Sydney), 36, Manning Road, Double Bay.

Mandel, Eva, provisional registration, 1947 (Univ. Sydney), Killiecrankie, MacLaurin Parade, Roseville.

Manning, William Kenneth, M.B., B.S., 1939 (Univ. Sydney), Repatriation General Hospital, Concord.

Morton, Max Robson, provisional registration, 1947 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.

Relf, Lawrence Lardner, provisional registration, 1947 (Univ. Sydney), Ryde District Soldiers' Memorial Hospital, Eastwood.

Rumore, Anthony, provisional registration, 1947 (Univ. Sydney), Sydney Hospital, Sydney.

Seymour, John Henry, M.B., B.S., 1946 (Univ. Sydney), 68, High Street, North Sydney.

Somerville, Don McLachlan, M.B., B.S., 1946 (Univ. Sydney), Base Hospital, Orange.

Thomson, Helen Elizabeth, M.B., B.S., 1946 (Univ. Sydney), Kiewa, Church Street, Pymble.

Waddy, John Archibald, M.B., 1942 (Univ. Sydney), Main Street, Cessnock.

Walker, Reginald Gordon, provisional registration, 1947 (Univ. Sydney), 23, Stratford Avenue, Denistone, via West Ryde.

Waugh, Martin Lindsay, M.B., B.S., 1946 (Univ. Sydney), Base Hospital, Orange.

Notice.

THE University of Sydney Medical Society will hold its annual ball at "The Trocadero", Sydney, on Tuesday, September 23, 1947, from 9 o'clock p.m. to 1.30 a.m. Tickets are twelve shillings and sixpence, and reservations may be made by telephone—MA 6431. Mrs. Harold Dew is president, Mrs. K. B. Noad is secretary and Mrs. Charles Berge is treasurer of the ball committee.

THE FEDERAL MEDICAL WAR RELIEF FUND.

THE following contributions to the Federal Medical War Relief Fund have been received:

New South Wales.

Illawarra Suburbs Medical Practitioners' National Emergency Service, £250.
C. P. C. Reilly, £6 6s.
A. J. Traill (second contribution), £5 5s.
Total: £261 11s.
Grand total: £19,570 11s. 6d.

Medical Appointments.

Dr. Mabel J. Mackerras has been appointed parasitologist, Queensland Institute of Medical Research, in pursuance of the provisions of *The Queensland Institute of Medical Research Act of* 1945 of Queensland.

Dr. E. F. Coyle has been appointed government medical officer at Trundle, New South Wales.

Dr. B. F. R. Stafford has been appointed a member of the Nurses and Masseurs Registration Board, in pursuance of the provisions of *The Nurses and Masseurs Registration Acts*, 1928 *to* 1940, of Queensland.

Dr. L. M. Fraser has been appointed government medical officer at Tara, Queensland.

Dr. F. C. Turnbull has been appointed visiting medical officer to the Institution for Inebriates, Marburg, in pursuance of the provisions of *The Inebriates Institutions Act of* 1896, of Queensland.

Books Received.

"Practical Obstetrics", by Bruce T. Mayes, M.V.O., M.B., B.S. (Sydney), F.R.C.S. (Edinburgh), F.R.A.C.S., F.R.C.O.G.; 1947. Sydney: The Australasian Publishing Company Proprietary, Limited. 9" x 6", pp. 322, with many illustrations, some of them coloured. Price: 57s. 6d.

"La Douleur", by Paul Chauchard; 1947. Paris: Presses Universitaires de France. 6¾" x 4¼", pp. 128, with illustrations.

"Treatment of the Patient Past Fifty", by Ernst P. Boas, M.D.; Third Edition; 1947. Chicago: The Year Book Publishers, Incorporated. 8¼" x 5½", pp. 480, with many illustrations. Price: $5.75.

"Office Immunology Including Allergy: A Guide for the Practitioner", edited by Marion B. Sulzberger, M.D., and Rudolf L. Baer, M.D.; 1947. Chicago: The Year Book Publishers, Incorporated. 8¼" x 5½", pp. 432, with illustrations. Price: $6.50.

"Aids to Qualitative Inorganic Analysis", by R. G. Austin, B.Sc. (London), F.R.I.C., F.R.M.S., with an introduction by R. H. A. Plimmer, D.Sc. (London); Second Edition; 1947. London: Baillière, Tindall and Cox. 6¼" x 4", pp. 226. Price: 5s.

"Gas and Air Analgesia", by R. J. Minnitt, M.D. (Liverpool), D.A. (R.C.P. and S., England); Third Edition; 1947. London: Baillière, Tindall and Cox. 7" x 4½", pp. 88, with many illustrations. Price: 5s.

Diary for the Month.

AUG. 26.—New South Wales Branch, B.M.A.: Ethics Committee.
AUG. 27.—Victorian Branch, B.M.A.: Council Meeting.
AUG. 28.—New South Wales Branch, B.M.A.: Branch Meeting.
SEPT. 2.—New South Wales Branch, B.M.A.: Organization and Science Committee.
SEPT. 3.—Western Australian Branch, B.M.A.: Council Meeting.
SEPT. 3.—Victorian Branch, B.M.A.: Branch Meeting.
SEPT. 4.—South Australian Branch, B.M.A.: Council Meeting.
SEPT. 4.—New South Wales Branch, B.M.A.: Special Groups Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute; Brisbane City Council (Medical Officer of Health). Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such notification is received within one month.

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad per annum payable in advance.